*Phi Delta*

# KAPPAN

*A Journal for the promotion of Research, Service, and Leadership in* EDUCATION

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Phi Delta KAPPAN

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*Journal of Phi Delta Kappa, Professional Fraternity for Men in Education*

For the promotion and improvement of free public education through a continuing interpretation of the ideals of research, service, and leadership

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# A Face to the Future

A CONCERN WITH PROGRAM rather than with finance only, characterized the 25th Biennial Council and 50th Anniversary Celebration. With the International Headquarters building completed and occupied for lo! these past two months, the thoughts and minds of the delegates seemed instinctively to turn to the future—to the Second Fifty Years. Not that finance was neglected. It simply took its place as a current problem to be solved simply and as a matter of course. Far more "fireworks" over finance had been expected in many quarters.

However, the inspiration gained from Phi Delta Kappa's first permanent home, the undoubtedly functional headquarters building, good both in design and in execution, on a wonderful site bought from Indiana University at a fraction of its real value, plus the knowledge that the appraised value of building and grounds is a good $40,000.00 over cost, all contributed to put the question of building finance in its proper place. It made the comparatively modest sum (about $22,500) needed for furnishings and equipment seem minor in comparison to the opportunity to plan and to underwrite a forward-looking fraternity-wide program.

Fortunately, also, continuance of fund-raising was authorized, for the next biennium at least, the funds so raised to be applied to the repayment of any sums borrowed for the purpose of completing the headquarters building, grounds, and buying furnishings and equipment.

A masterful budget, masterfully presented by an exceedingly competent and hard-working budget committee, appeared to present, to most delegates at least, a thoughtfully considered method of solving the most pressing problems of fraternity finance. Thus the outstanding characteristic of this council was its determination to consider the fraternity program; to plan for a full load of fraternity organization, commission, and publication work; and to set its face resolutely toward the future.

Contributing to an extremely smooth-flowing council were the physical arrangements of the Indiana University Memorial Union: ample room for the traditional council set-up, and a series of small meeting rooms for committee and sub-committee discussions—all under one roof. In addition were the numerous voluntary services contributed by the members of Alpha Chapter and by members of the staff of Indiana University, from President Wells to the messenger boy (a *boy* of 31 years' service!) who graciously unlocked the door of the University News Bureau to an early morning visitor. Incidentally, this same News Bureau secured such newspaper coverage of this 25th Biennial Council that future councils have a mark at which to shoot.

Another graphic illustration of the value of holding a council near the permanent headquarters installations was the outstanding clerical service performed by Business Manager Jack Jones and his devoted staff of typists and other clerical workers who, with scarcely six weeks' opportunity to become familiar with PDK affairs, kept the council well supplied with the necessary data, memos, and reports. At no time was the council delayed by lack of clerical assistance.

In the opinion of many, particularly those who have witnessed the slow climb of field chapter membership to a position of near equal status, the liberalization of the rules respecting field chapter membership may well represent the most significant and far-reaching action of this council.

### Recommendations of the President

After reviewing the principal events of the past biennium, President Stoops, in his opening presidential address, said:

In the light of problems and achievements of the Fraternity at this Semi-Centennial, I should like to make the following recommendations to the council for its consideration. It is recommended that:

1) A five-day conference of 10 Phi Delta Kappans be called to prepare recommendations for district and legislative reorganization—the membership, time, and place to be set by the board of directors.

2) A committee be appointed to study fraternity problems (excluding organization) brought about by internationalization.

3) The council determine final ways and means of financing the headquarters building, provide for a 10% contingency fund in the budget, and study a long-term finance pattern adequate to finance the kind of program that we expect from Phi Delta Kappa during the next 50 years.

4) For the positions of business manager, editor, and executive secretary, plus clerical positions as provided for in the budget—that adequate salaries

be recognized as indispensable. (The cheapest employees are sometimes the most expensive—and the highest paid employees are usually the cheapest).

5) The council study possibilities of abolishing divisive classifications of membership and designate each member merely as a Phi Delta Kappan.

### Officers Elected for the Next Biennium

*President*—M. L. Cushman, University of North Dakota, Grand Forks, N. D.
*First Vice President*—Charles R. Foster, University of Florida, Gainesville, Fla.
*Second Vice President*—John C. Whinnery, Montebello City Schools, Montebello, Calif.
*Recording Secretary*—Maynard Bemis, University of Wyoming, Laramie, Wyoming.
*Comptroller*—J. Roy Leevy, Purdue University, Lafayette, Indiana.

### District Representatives Elected

*District I*—Homer Burroughs, Seattle, Washington.
*District II*—Arthur T. Tait, Riverside, California.
*District III*—Ernest M. Anderson, Pittsburg, Kansas.
*District IV*—Gordon I. Swanson, St. Paul, Minnesota.
*District V*—Russel S. Merkel, Indianapolis, Indiana.
*District VI*—A. G. Clark, Pittsburgh, Pennsylvania.
*District VII*—Guy C. Mitchell, Clinton, Mississippi.

### Among Council Actions: (Unofficial Listing)

Authorized study of redistricting and/or adding districts.

Approved the rewritten *Teaching as a Man's Job.*

Approved a revised and clarified induction ceremony; the writing of an orientation booklet for new members; and formulation of a creed or code of ethics for Phi Delta Kappans.

Acted to improve communications by:

1) Continuing and expanding current chapter visitation services of fraternity officers.
2) Providing a kit for new officers to contain list of duties, forms and directions, and suggestions for programs, projects, and activities.
3) Legalizing the custom of district representatives serving as an advisory committee, meeting with the board of directors at annual summer meetings. (This has become a practice over the past few years.)
4) Providing for transmission by district representatives to chapters within their districts of biennial council agenda—such agenda to reach chapters by November 1 preceding the council meeting.
5) Providing for attendance of area coordinators at future councils; and for holding of leadership conferences for officers of local chapters, where feasible, by area coordinators.
6) Providing for a survey of readership of PHI DELTA KAPPAN; authorizing study of establishment of a house organ for fraternity circulation; and recommending monthly chapter newsletters, and chapter exchange of ideas.
7) Indicating willingness to plan production of audio-visual materials to assist with problems of desegregation, fraternity orientation, teacher recruitment, and other fraternity activities.

Authorized an interim committee to study location of chapters, faculty membership, field chapter initiation, more adequate standardization of membership requirements, and other provisions.

Changed name of Commission on Study of Problems of Integration to Commission on Study of Educational Policies and Programs in Relation to Desegregation—and authorized it to continue to study the implications and problems of desegregation, and to encourage fact finding and intelligent interpretations of research.

Eased emeritus membership requirements by providing that if all other qualifications are met (age 65, good standing for at least 20 years—10 of which immediately precede application) the member need not have officially retired from full-time service in the field of education.

Approved the publication of the new edition of *Teaching As a Man's Job.*

Adopted a constitutional amendment (if approved by chapter vote) which gives campus chapters the responsibility for non-resident members.

The office of business manager was legalized by amendment to the by-laws with his salary to be fixed by the board of directors.

By petition a resolution was adopted asking that teaching be classified as an essential occupation in Selective Service regulations.

A motion to raise annual fraternity dues from $4.00 to $5.00 received a majority vote but failed to get the necessary two-thirds. The need for this increase in dues to support a professional program was placed on the agenda of next year's district conferences.

In summary, it can be said that divergent views were many—and expected. These views were expressed fully and freely in sometimes warm, and always sincere, committee and floor discussions. But so great was the will to understand and to reach common agreement that a great mass of subject matter requiring legislative action reached the floor of the council early enough to receive the thorough debate and thorough explanation and discussion it deserved. While it may be said, also, that other councils have transacted a larger volume of business, few have had the opportunity to study proposals before them as thoroughly. This council organized quickly. The various committees had early opportunities to discuss the questions before them; they reported equally early. It is thus felt that decisions will stand the tests of time.—L.A.

# At the Edge of Mystery

*By* RUSSELL J. HUMBERT

**What follows is the outgrowth of two facts—one a mood, the other a condition. The mood is the normal mental and spiritual hunger which causes us ever to ask questions and to seek answers. The condition is the state of the world which, noisy as it is, causes some to be lost in a sea of modern babel while others find it a challenge to move beyond the sonic barrier of confusion and doubt to find faith and certainty.**

As a basis for our thinking this morning I go first to a rather strange source, a modern magazine, *The New Yorker*. The lead editorial for January 15, 1955, dealt with a television interview which Edward R. Murrow had with the noted physicist, J. Robert Oppenheimer, who said he was not unworried about the results of the automic bomb experiments being currently conducted in various parts of our world. The editorial concluded with these words of spiritual value: "In his Columbia University speech, Mr. Oppenheimer used a phrase that is memorable: he said, 'We live at the edge of mystery!' Curiously enough, there was a small news item about the same time that beautifully illustrated his words—the announcement that a certain substance in human tears was believed to have an arresting effect on cancer cells. Here is the edge of mystery for you: love, sorrow, beauty, causing tears, tears arresting cancer: ergo, love arresting cancer. The fine edge of mystery!"

Today, in a different way we are standing at the edge of mystery. This is not new, for in a very real sense our birth and continued existence is a mystery. The manner in which we develop as human beings is an unknown quantity. Here we may well adopt the words of the writer of First John when he says, "We are God's children now; it does not yet appear what we shall be, but we know that when He appears we shall be like Him, for we shall see Him as He is."

Our interest is in education. We are supposed to be professionals and as such continual learners. Every day we stand at the edge of mystery and these poetic lines best express my own feeling:

> I love preliminary things, the tuning up of flutes and strings . . .
> The little scrolls that musicians play
> The varying notes to feel their way . . .
> The hush, the hum with which it dies . . .
> But most, I love to see the curtain rise . . .

As the curtain rises and we stand at the edge of mystery may we explore our own mood and prepare to move into the unknown together.

### The Edge of Mystery in the Material

Some people complain about our materialism; they deplore our gadgets and they go so far as to damn our discoveries. No doubt we have become more and more aware of things, but along with this awareness we are conscious of the limitation of things. The many things with which we live have made us aware also of the creative mind back of the material. This results in a sense of real humility. Some of you will remember the editorial and the telecast to which I referred a few moments ago, and the almost startling humility on the part of the great physicist, Oppenheimer, which was climaxed with this statement: "We guess in the night and then correct our guesses by day."

The nature of the real is becoming more complicated and even more of a mystery. As citizens of the western world, we do not worry about all the frontiers having been conquered; they are greater in number and extent than in any period of man's history. An expert in the field of electronics declared recently that the place where we stand today in electronic development is comparable to that in exploration at which Columbus stood when he pulled up the gangplank of the Santa Maria. This challenge gives us rea-

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*The Reverend Doctor* RUSSELL J. HUMBERT *is president, DePauw University, Greencastle, Indiana. This address was the concluding one of the 50th Anniversary Celebration.*

son to pause and find a trustworthy chart and compass. A complicated and uncharted future can best be met *by the trained, yet humble mind.* From the sensitive mind of the eighteenth-century poet, William Cowper, came this:

> Knowledge is proud that he has learn'd so much;
> Wisdom is humble that he knows no more.
> —(The Task.)

We are in a position to take advantage of the challenge presented by the ever-growing complexity of the material world. Man at his best is constantly curious about the nature of reality. In a much less academic area, a celebrity in the field of entertainment was complaining about his passing the fifty-year mark; he made this complaint in the presence of Charles Kettering, the man of practical engineering fame who is himself past seventy years of age. Mr. Kettering reminded the celebrity that aging did not bother him greatly because he found it best to "cooperate with the inevitable." This is not blind submission, but the challenge of the unknown in the area of the material. One of the world's leading men of science, President Lee DuBridge of Cal Tech, recently implied that science is one more path to greater human understanding of our material world when he said: "Men climb Mt. Everest, explore the bottom of the sea, sail to the far corners of the earth, explore the atom, the crystal, and the stars—all because they are born explorers. . . . Are science and engineering just the tools for man's amusement and his ultimate destruction? Let us say, rather—and more truthfully—that they are his . . . tools in his eternal struggle to achieve his highest . . . spiritual ends." (*Time,* May 16, 1955.)

Yes, we stand at the edge of mystery in the area of the material; and *it does not yet appear what we shall be.*

### The Edge of Mystery in the Mental

A preceding generation was known as the "Age of Reason," another, the "Age of Doubt," and those who follow us may refer to this as the Era of the Mind. Great advances have been made in our lifetime in the understanding of the human mind, yet we stand at the edge of mystery in the area of the mental.

With all good conscience we can say the mind has come of age in our generation. The wise providence of God has timed this well, for when men are surrounded by their own creations they are forced to sharpen their God-given minds to guide their creative abilities. Our culture is the result of our cooperative thought, and this process is still in its infancy. Gilbert Highet, in his well-known book, *Man's Unconquerable Mind,* says it well: "All important cultures are manifestations of the power to think. Western civilization is the product of systematic thought. It would be easier to destroy mankind physically than to destroy it mentally." The writer of the Wisdom literature of the Old Testament said: "A wise man is strong; yea, a man of knowledge increaseth strength." (Proverbs 24:5.)

It is important that we feel the tug of the Eternal as we stand at the edge of mystery in the area of the mind. Man by himself can become arrogant, deceitful, and destructive. We need the nudge of the Divine to become moral, constructive agents. Out of his rich experience as an experimenter and inventor, Thomas A. Edison made this observation: "I know this world is ruled by Infinite Intelligence. It required Infinite Intelligence to create it and it requires Infinite Intelligence to keep it on its course. Everything that surrounds us—everything that exists—proves that there are Infinite Laws behind it. There can be no denying this fact. It is mathematical in its precision." The realization of God's power and presence will have a transforming effect on each of us as individuals. A vision of truth and beauty moves us to accept truth and to emulate the beautiful. This must have been what Jesus meant when he said: "Blessed are the pure in heart; for they shall see God," and what Paul meant when he said to the Romans: "Be ye transformed by the renewing of your minds." (Romans 12:2.)

Since this is the era of the mind, it needs not only the spiritually aware, but the mentally curious and the divinely discontented. I think it is an accepted fact among psychologists that the happiest people are those who are discontented, those who are not satisfied with things as they are and who find happiness in trying to improve them. The Pulitzer Prize novelist of a few years back, Oliver LaFarge, penned these lines: "Were it not for the twin forces of curiosity and discontent, man would still be living in caves and brush shelters, inadequately clad in crude skins, and nourished by half-burned, half-cooked gobbets of whatever animals he managed to kill with crude stone-tipped weapons. Curiosity is not unique in man, but man alone fortified it with speculation . . . so that he could wonder 'why' and 'what would happen if.'"

There is little doubt concerning human ability; this is proved by our record and our accomplishments. We have a body of self-secured knowledge and reasonably trained minds; now we must supply the power and drive for the future. We might well embrace the idea of

Emerson when he said: "What I need most is something to make me do what I can." We have confidence in the truly educated moral person. This person has discovered how to teach himself and will forever be a learner. In the area of the mind, we stand at the edge of mystery and *it does not yet appear what we shall be.*

### The Edge of Mystery in the Spiritual

Because man's religion is spiritual and personal, religion and mystery have usually been associated. Our training and aptitude will help us to explore this normal area of life. As we think of this continuous quest we do so in the spirit of the seventeenth-century writer, Henry Vaughan, when he said:

> Search well another world: who studies this,
> Travels in clouds, seeks manna, where none is.
> — (The Search.)

Standing at the edge of spiritual mystery, we live in a predictable, friendly world order. If we were in need of witnesses to support this claim, they could be found in every discipline and area of education. Let me rely upon four men, leaders in the field of science. It was Sir James Jeans who said in 1930: "Thirty years ago we thought, or assumed, that we were heading toward an ultimate reality of a mechanical kind. It seemed to consist of a fortuitous jumble of atoms which was destined to perform meaningless dances for a time under the action of blind, purposeless forces and then fall back to form a dead world. . . . Today there is a wide measure of agreement which, on the physical side of science, approaches almost to unanimity, that the stream of knowledge is heading toward a non-mechanical reality. The universe begins to look more like a great thought than like a great machine." Robert A. Millikan said at about the same time: "The idea that God is not a being of caprice and whim, as had been the case in all the main body of thinking of the ancient world, but is instead a God who rules through law. . . . That idea has made modern science, and it is unquestionably the foundation of modern civilization." Another of world renown in this field, Arthur H. Compton, said in 1946: "In their essence there can be no conflict between science and religion. Science is a reliable method of finding truth. Religion is the search for a satisfying basis for life. . . . Beyond the nature taught by science is the spirit that gives meaning to life." Then sometime before his death Albert Einstein added his testimony when he said: "God is not playing dice with the universe." Yes, we have learned that God and man must work together within those predictable laws which govern the Universe. What we discover in one small area of learning helps us make even greater discoveries in another. With Dante Gabriel Rossetti we say:

> Gather a shell from the strewn beach
> And listen at its lips: they sing
> The same desire and mystery,
> The echo of the whole sea's speech.
> — (The Sea-limits.)

Another assumption upon which we build life at the edge of spiritual mystery is that man at his best is a trustworthy creature. Not only can we trust the predictability of the Universe, but we can trust the persons who live in this world order. Today we think of the many persons to whom we are indebted: members of the family, teachers, benefactors, and a host of others. The influence of a great person is like a trail of trust; he leaves the trail in the sky of mankind like the vapor trail of a high-altitude plane. Integrity of character is a normal quality for the truly educated persons; this person we can trust.

In addition to our faith in a world order and God's persons, we come to a climax of trust and faith as we experience God—a knowable, understanding, loving Father. Here, too, we know few of the answers; we stand at the edge of mystery.

Here we move more surely into the area of faith. Life is more like the artist and his painting than it is like the accountant and his books. Some people are content to look upon life as a mechanical accounting procedure, counting the length of days, number of years, amount of money, and other tangibles. From this point of view everything is predicated upon dimension and substance. But from the Judeo-Christian point of view we have a God who is more than an accountant; He is a creative artist, concerned with beauty, truth, growth, and those personal qualities which make for eternal satisfaction.

With the full realization that I am being negative for a moment, let me mention some modern mental robbers that plague us at the edge of spiritual mystery.

1) Those who worship objectivity and bland neutralism rob the mind of a needed intellectual curiosity.
2) Those who set materiality at the center of life rob the soul of spiritual satisfaction.
3) Those who move away from strong moral foundations are robbed of a future house of life.
4) Those who are cynical and professional doubters rob some of a healthy faith and cause them to flounder in a purposeless doom.

5) Those who see only the failure of mankind to build a lasting peace rob some of their hope for a better mankind tomorrow.

Each important level of human experience produces new mysteries waiting to be explored. This is the motive power and the abiding purpose of the truly educated person—to continue to explore the unknown. We stand at the edge of mystery in the area of the material, the mental, and the spiritual. The late Russell W. Davenport, out of a rich and colorful experience as a man of letters, helps us find an historical perspective at the edge of our mystery today in the words of this poem:

The vision that the world is waiting is
The same that raced its way in wagon-tracks
Across empurpled plain and precipice,
And whispered in the starlit tamaracks
Where travelers told of freedom in the West
Around the fires of hopeful bivouacs:
The vision of a mighty purpose, pressed
By all the peoples of the earth, to make
The hidden truth within them manifest:
And as this continent was free to take,
And thus awake the hope of all mankind,
So now, in hope, we hear the future break
On the unsovereigned beaches of the mind.
—(The Dignity of Man.)

## Budget for the 25th Biennium (48th and 49th Fiscal Years), as Adopted by the 25th Biennial Council

ESTIMATED EXPENDITURES

| Item | Old Budget 46th & 47th Fiscal Years | New Budget 48th & 49th Fiscal Years |
|---|---|---|
| **Legislative** | | |
| Biennial Council | $22,000.00 | $27,500.00 |
| District Conferences | 7,810.56 | 9,300.00 |
| **Commissions & Committees** | | |
| Recruitment | 1,750.00 | 2,000.00 |
| International Education | 1,350.00 | 2,000.00 |
| Free Public Education | 1,700.00 | 2,000.00 |
| Research | 600.00 | 1,000.00 |
| Desegregation | 1,100.00 | 3,000.00 |
| Other Committees | | 600.00 |
| **Administration** | | |
| Board of Directors | 12,000.00 | 10,000.00 |
| District Representatives | 9,000.00 | 11,000.00 |
| Delegates, Organ. & Instit. | 500.00 | 1,000.00 |
| Executive Secretary—Salary | 19,000.00 | 22,000.00 |
| Executive Secretary—Travel | 6,000.00 | 5,000.00 |
| Executive Secretary—Gen. | 400.00 | ..... |
| Business Manager—Salary | 12,100.00 | 16,000.00 |
| Business Manager—Expenses | ..... | 1,500.00 |
| Clerical Staff | 33,575.00 | 30,000.00 |
| Audit and Legal Fees | 1,500.00 | 1,500.00 |
| **Employee Benefits** | | |
| Retirement Fund | 2,235.00 | 3,000.00 |
| Social Security | 1,300.00 | 2,000.00 |
| Blue Cross—Blue Shield | 610.00 | 900.00 |
| **Office Operations** | | |
| Stationery & Supplies | 2,300.00 | 3,000.00 |
| Printed Supplies | 4,000.00 | 4,000.00 |
| Postage and Express | 6,100.00 | 6,000.00 |
| Telephone and Telegraph | 1,700.00 | 1,500.00 |
| Binding of Records | 900.00 | 200.00 |
| Insurance & Surety Bonds | 1,000.00 | 500.00 |
| Office Miscellaneous | 2,400.00 | 400.00 |
| **Maintenance—Bldg. & Equip.** | | |
| Rentals | 4,600.00 | 300.00 |
| Utilities | 1,700.00 | ..... |
| Electricity | | 2,000.00 |
| Gas | | 1,500.00 |
| Water | | 250.00 |
| Custodian, Bldg. & Grounds | 1,200.00 | 1,800.00 |
| Maintenance, Equipment | 800.00 | 600.00 |
| Maintenance Bldg. & Grounds | 67.00 | 600.00 |
| Custodial Supplies | 300.00 | 400.00 |
| Organization Memberships | 600.00 | 600.00 |
| **Magazine** | | |
| Editor, Salary | 13,000.00 | 18,000.00 |
| Editor, Expenses | 1,800.00 | 1,500.00 |
| Clerical | 8,800.00 | 12,600.00 |
| Publishing | 50,000.00 | 50,000.00 |
| Engraving & Art Work | 1,000.00 | 1,000.00 |
| Postage and Express | 2,600.00 | 2,800.00 |
| Telephone and Telegraph | 300.00 | 500.00 |
| Stationery and Supplies | 200.00 | 300.00 |
| Miscellaneous | 100.00 | 200.00 |
| Editorial Consultants | 200.00 | 300.00 |
| **Capital Outlay** | | |
| Office Equipment | 1,300.00 | |
| Custodial Equipment | | |
| Building and Grounds | | |
| **Special Funds** | | |
| Dictionary of Education | 4,000.00 | ..... |
| History of Phi Delta Kappa | | ..... |
| Research Monograph | 3,000.00 | 2,000.00 |
| Deficiency Replacement Fund | | 5,500.00 |
| **Totals** | **$248,497.56** | **$269,650.00** |
| 24th Council Budget | $243,735.00 | *$25,915.00 |

* Net increase over 24th Biennium budget.

ESTIMATED RECEIPTS

| Income | 46th & 47th Fiscal Years | 48th & 49th Fiscal Years |
|---|---|---|
| From Membership Dues | 177,000.00 | 201,900.00 |
| From Initiation Fees | 54,000.00 | 54,500.00 |
| From Stores Sales | 8,000.00 | 8,250.00 |
| From Miscellaneous | 5,000.00 | 5,000.00 |
| Totals | 244,000.00 | *269,650.00 |

* Net increase over 24th Biennium, $25,650.00.

Prejudices, it is well known, are most difficult to eradicate from the heart whose soil has never been loosened or fertilized by education; they grow there, firm as weeds among rocks.—Charlotte Bronte.

# A Glorious Past—A Challenging Future

*By* **PHILIP LOVEJOY**

**The educational research historian of 2550 A.D. will have a most inspiring experience in looking back to the twentieth century to learn what was going on in education. He will find many, many activities and achievements that will warrant his more minute study for he will cast his eye over the entire field to get the feel of the age. Two world wars and a "police action" will explain much that took place economically, socially, and politically. Enormous scientific, medical, and dental progress and economic and sociological upheavals will be seen in all lands.**

IT IS POSSIBLE that the educational historian of 2550 A.D. will find the year 1955 one of the most interesting of the entire century. What will he observe? Obviously in any short news digest he could not include all of the accomplishments, great and small. To give tone to the year let us listen to some of the observations he might well include.

### 1955 Was the Year

It was the year when Princess Margaret of Britain made a most momentous decision, further giving evidence of integrity and character in high places.

It was the year of great concern when the President of the USA was stricken with a heart attack—and worldwide interest was instant for again in high places character was in evidence.

It was the year when two of the many service organizations celebrated their fiftieth and fortieth anniversaries, respectively: Rotary International its Golden and Kiwanis International its fortieth. Why any interest about these on the part of the researcher? Primarily because all service clubs of both men and women had made a tremendous impact upon the lives of educators—and hence upon education itself. They provided a means of interpretation of the schools to the public and vice versa.

It was the year videophone was inaugurated —television attached to a telephone so the speakers could see each other.

It was the year when hundreds of thousands of children were given hope against the ravages of polio when Dr. Jonas Salk produced a helpful vaccine.

It was the third consecutive year when the grand champion steer at the International Livestock Show in Chicago was owned and raised by a teen-age girl.

It was the year when in the United States there were thousands of citizen conferences on education, thereby bringing to the general public an awareness of the importance of education to the American way of life and of the problems confronting education because of changed economic and social conditions as aftermaths of great world wars.

It was the year of the White House Conference on Education, conceived by a fellow Phi Delta Kappan and carried out under the leadership of numerous members of the fraternity.

It was the year when six major questions concerning education and their suggested answers received world-wide publicity and acted as a prologue to great activity in education.

It was a year of significant contrasts: for instance, in that year $1,251,200 was paid for *one* horse. This was $500,000 more than had ever been paid previously for one such animal.

It was the year when a small city in Ohio announced that for the third consecutive year sales at the local state liquor store would exceed one million dollars.

It was the year when more money was spent in the USA for automobiles than for education.

It was the year when education in colleges of the USA received a tremendous financial impetus. This came to pass because years previous-

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PHILIP LOVEJOY *is secretary-emeritus of Rotary International and a member of Phi Delta Kappa for many years. This dedication address was delivered before the 25th Biennial Council prior to adjournment to the Headquarters building, itself.*

ly a lad with vision and energy was enabled under the Western way of life to create two transportation devices known historically both as the Model T and the Model A. Profits ensued—a foundation was established, and the trustees in 1955 distributed $260,000,000 to 615 private colleges in the USA to increase salaries of the teaching staff and otherwise to make for educational advancement. (Parenthetically, and to round out the picture, an additional $290,000,000 was given to hospitals and medical schools.)

It was the year of fabulous financial giveaways on TV. These activities were so famous that it did not take long for teenagers to make the usual pithy observations. On one occasion a man drove up to a service station in a *new* Cadillac. He was queried by one high school student—"Mister, what question did *you* miss?"

**And in Bloomington, Indiana—**

The historian continues to report. He observes the town of Bloomington, Indiana. He learns of the establishment in that city, in 1906, of the professional educational fraternity called Pi Kappa Mu, based on three great educationists of bygone days—Plato, Comenius, and Mann. He learns of the simultaneous desire in other places for similar fraternities, and that in at least two other places definite steps were taken to achieve the desire there expressed, thus showing the universal need for such an organization. Lack of communication in those ancient days (does it seem possible?) was perhaps the reason why unification was delayed until 1910 when a unified Phi Delta Kappa became an actuality.

The historian is intrigued. He traces the activities of the fraternity. He notes progress. He sees the achievements and he records with gratification the results of the long expressed desire for a central headquarters building when the two-story, 7600-square-foot building was completed at the edge of the campus of Indiana University in the year 1955 and dedicated on December 31, 1955, the end of the fiftieth year of this tremendously significant organization.

**A Teacher Stands in the Background**

Naturally the historian of educational activities in the year 2550 A.D. in looking back will record myriads of other activities no less important than those cited. In a brief digest it is not essential to go into further details. Why is mention made of some of the activities and events hereinbefore cited? Because back of each of the significant accomplishments was a teacher, perhaps long since lost sight of. Early in 1953, the President of the USA paid tribute to his teachers. You and I do likewise. Back of each of us there are teachers—dedicated individuals with vision, self-sacrifice, and a spirit of service. Teachers who exude love for those with whom they come in contact. Perhaps the historian will discover the story of the difficult section of a great city in western Pennsylvania wherein it was felt that perhaps many of the boys from that neighborhood might not turn out as well as one could desire. When a survey of these individuals, these 200 boys, was made some 25 years after their schooling had ended, it was discovered that 196 of them had become reasonably successful in life, each a man of integrity and high character. The results were so satisfying that a further inquiry was made only to discover that all of these boys had had the same teacher in elementary school. She was sought out after these many years and queried as to what she did to cause these charges of hers to become so wonderful. Her reply was indicative of the dedicated teacher of the twentieth century and indeed, perhaps, of all centuries. "I don't know," she said, "nothing special—I just loved them."

**The Great Urge for Liberty**

The historian will observe that this continent was settled by groups who wanted to get away from oppression, who wanted to establish countries where the worth of each individual would always be considered and where one could develop in accordance with his individual ability. There were to be no barriers to his advancement if he were willing to work. He would be enabled to go as far as his ability would permit.

From the earliest times when man began to think for himself, there has been a wide consensus that the basis of true civilization is the belief in human dignity and the intrinsic God-given value of every human person. The American continent was created out of that faith in liberty and the integrity of the individual. Our ancestors knew that each individual must be educated to take his rightful place. He must have knowledge of affairs past and present, and he must see the place of the individual in the total picture. An uneducated democracy is self-destructive. Thus from the earliest times, education and the means thereof were to be forever encouraged.

I shall never forget a ride I had in the early days of 1955. A lumber merchant friend of mine drove me in a jeep up Mt. Cushman in Vermont. Near the top of the mountain I noted some six-inch deciduous seedlings. I asked him how they got there and he said that he had planted them. I asked him when they would be good as

lumber and he replied, "In the year 2015 A.D." Since that was far beyond his span of years, I asked him why he had planted these trees and he replied, "Because my grandfather planted some on the other side of the mountain for me."

### Problems Man-Made and Man-Solved

Thus the historian of 2550 A.D. in observing the significant year of 1955 will note that that year as well as all the others was the result of all the years preceding; of the vision and sacrifice of those who had gone on before; of the leadership exerted by teachers; of the faith of the forefathers who in migrating to new territory always established immediately the three basics of modern civilization—i.e., a home, a school, and a church. America never lost sight of the value of the three. Economic changes, wars, depressions made significant inroads. *Tempus Fugit.* The demands of an expanding economy were tremendous. The American Dream of free public education increased constantly with the expanding sociological concepts of the times. The demands outstripped the facilities. In the rush of things the public did not always get the facts soon enough to provide the wherewithal to meet their own demands.

Thus there developed a great program of public school relations. There were citizen conferences. There was a White House Conference. The public began to become aware of what was happening and of what its own demands had caused. The result? The American Dream was given further impetus, for when the public understood, funds were forthcoming.

Thus the historian found the twentieth century intriguingly interesting. He saw the people groping with their own problems. He observed that most of their problems were man-made and hence could be man-solved. He noted leaders coming forward. He saw the value of professional fraternities in various fields. He observed the leadership exerted by their dedicated members. Since the historian of whom we speak was especially interested in education, he paid particular attention to Phi Delta Kappa because its members were educational leaders with tremendous vision, beginning in 1906 with Dr. Bergstrom of Indiana University who had had the original idea concerning the need for a great professional educational fraternity.

### To Maintain a Democracy

Early it was stated succinctly that the purpose of Phi Delta Kappa was to promote free public education as an essential to the development and maintenance of a democracy, through continuing interpretation of the ideals of research, service, and leadership, and to translate these ideals into a program of action appropriate to the needs of public education.

Who can ever measure the results of the activities of any one individual? Dedicated to a single purpose, he attracts others like minded and together they exert a leadership that is far-reaching. Thus in Phi Delta Kappa, from 1906 through 1955, men were inspired to do their utmost to promote free public education as an essential to the development and maintenance of democracy. It was no easy job.

Fifty years pass quickly. The historian notes the program of the Golden Anniversary Council meeting. He reads the inspiring addresses. He notes that while each mentions the great and glorious past, more attention was given to the future, the years that were ahead of 1955. He saw more and more dedicated men in the fraternity. He saw the place that each of them took in the fields of research, leadership, and service. He saw that they realized the crisis that had come, mostly as a result of biological growth and its attendant problems. He saw the men ready to continue to sacrifice so that the best in educational research might have fruition; that true leaders might continue to be found on a selective basis in increasing numbers; that service would continue to dominate the field since those in education are the servants of the people.

### "Your Schools Better Than You Think"

He observed that the fraternity constantly developed dedicated men, that it brought out the best in them and challenged them to do likewise with those with whom they came in contact within the profession. The historian noted that the new headquarters of Phi Delta Kappa was but the material facility to bring to pass in the immediate future the spiritual advancement of the great God-given aspirations of man. A building is dedicated, but more important is the dedication and rededication of men to continue in a profession even though it will never adequately reward any of its members in a material sense. Will there be other rewards? Does one seek any? There *are* rewards far greater than material ones. A way of life will be preserved. Individuals will continue to be permitted to develop in accordance with their special abilities. They will be self-directed, self-controlled, and self-appraised. In the words of the public school code of Hamtramck, Michigan, they will be enabled to live successfully in the democracy.

The historian had many other items to check. He was intrigued with all that had preceded Phi

Delta Kappa. He observed that all past is prologue to present and future. He saw great educational difficulties arise and he observed Phi Delta Kappa taking its place of leadership with its 87 chapters on campus and 62 in the field, with some 67,000 dedicated members. He was agreeably surprised at the various Phi Delta Kappa commissions he found at work in 1955. With great interest he read the report of one of them—the Commission on Free Public Schools, as set forth in the November, 1955 issue of PHI DELTA KAPPAN. He noted the challenge to educational administrators everywhere to develop an adequate program of public school relations. He learned that educators themselves realized they were not utilizing all available community resources and that the public did not understand what the schools were doing or what were their problems. He noted frequent headline appraisal of the schools but that on further study there was real progress in education in 1955 compared with what had gone on before. He spotlighted a wonderful article in a magazine called *Harper's* in which in September, 1955 a layman named Sloan Wilson had stated, "Your schools are better than you think." He saw a hopeful sign in that this same individual was actively involved in the White House Conference on Education.

**New Concepts in a Changing World**

He noted new concepts in education to keep pace with an ever changing world. He found no greater challenge to the educational profession than to prepare individuals to live in a world of the future so unfathomably unbelievable when compared with that in which the educators themselves were living. He saw them meeting the challenge by installing in a ten-year period as many as 35 new courses of study in a single high school. He saw them researching for answers and learned that in one county in Pennsylvania the 70% of the high school students who were not going to college wanted an expanded curriculum that for the girls would include courses in beauty culture, practical nursing, dress design, and homemaking and for the boys, auto mechanics, carpentry, radio and TV.

To the historian this all seemed to be a far cry from the earlier classical courses—but he saw the times changing and the schools dynamic to meet the changes. He saw the need for attention to the gifted and that Phi Delta Kappa was readying to meet this need. He noted attention to the handicapped. He saw courses for the homebound. He saw education dynamic—he saw Phi Delta Kappa carrying out its prescribed purpose in doing everything possible to promote free public education as essential to the development and maintenance of democracy in the USA and Canada—and ultimately the world at large. The challenges in 1955 were terrific.

The historian of 2550 A.D. had the advantage of being able to observe what Phi Delta Kappa had accomplished after it dedicated its new headquarters building. He found the fraternity working harder than ever in its second fifty years. He saw the members devoting themselves intensely to the development of an adequate program of public school relations, a continuous factual information program. The historian noted that the first fifty years of Phi Delta Kappa had been but prologue. He observed that in the second fifty years Phi Delta Kappa had been challenged more than ever and that it had not been found wanting. Its second fifty years were in geometrical progression of achievement. The greatest years of Phi Delta Kappa came after the building dedication in 1955.

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The University of Pennsylvania has received a grant of $113,000 from The Richardson Foundation, Inc., Greensboro, North Carolina, for the establishment of a foreign policy research institute, Dr. Gaylord P. Harnwell, president of the University, announced in late March. The activities of the institute will be concerned with the study of major problems in international relations and their impact upon the formation of United States foreign policy.

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An executive is a man who decides. Sometimes he decides right but always he decides.—John Patterson.

**PHI DELTA KAPPA LUNCHEON**
**Monday, February 20**

**MADISON HOTEL**
**12:15 p.m.**
**(Adjourn at 2:00 p.m.)**

**Tickets—$2.00**

**Speaker: E. T. McSwain, Dean, School of Education, Northwestern University, Evanston, Ill.**

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**Secure your ticket in advance at Registration Headquarters, Auditorium**

**It is, I would say, relatively easy to demonstrate dramatically the need for greater leadership and service in the field of education; but I should like to set for myself the challenging task of dramatizing the need for greatly increased emphasis upon educational research.**

# The Case for Educational Research

*By* **S. M. BROWNELL**

I SHOULD LIKE TO deal tonight for the most part with the third of the great aims which this fraternity and the Office of Education have in common—that of promoting educational research. You will appreciate that I select this phase of our common interest not out of lack of enthusiasm for the others, but because it happens to be the one most easily slighted.

I say that this is a challenging task because it requires that we look beyond many of our immediate and pressing concerns and on to the problems which lie beyond. You will not misunderstand me, I am sure, when I suggest that while we are coping with the immediate problems of classroom and teacher shortages, we must also keep one eye on the problems which we know will rise up to take the place of those we solve. The dimensions and shadows of these future problems begin to appear dimly on the educational horizon as we make our way through the smoke of the immediate battle, and we must always examine them carefully while we carry on the close-at-hand lest we find ourselves face-to-face with another critical situation for which we are not prepared.

## Progress Through Research

In those all-too-rare moments when I can free myself from the day-to-day, hand-to-hand combat which seems to characterize the educational struggle these days, long enough to try to see the full scope of educational needs and to scan all fronts on which action is needed, I am impressed with the fact that progress has been made in many fields of human endeavor much faster and much more substantially than in education. The efficiency of the farmer, the worker, the doctor, in dealing with his problems has multiplied many fold. In large part this is because new knowledge has been made available to him as the result of careful, systematic, thorough, and extensive research. His problems have been analyzed and possible solutions tested by careful and skilled men. Results have been painstakingly evaluated. Many ideas and projects have been unsuccessful, but search and research have continued. The yield from each farm acre has been multiplied by what has been learned of soils, their cultivation and fertilization, of irrigation and crop rotation, as well as of improvements in seed and hybrids. Diseases which have long cursed the human race have yielded to control through new drugs, new preventative vaccines, and health measures which have been developed as the result of meticulous and creative study. Technological developments resulting from research have enlarged many times the power available to each of us.

## Armed Only With Arithmetical Formulas

I am firmly convinced that a balanced and constructive assault upon the problems of education requires similar attention to strategic planning and study—study which will be so thorough, rigorous, and extensive as to bring about significant advances in the efficiency with which our human resources are developed through education, and in the efficiency with which money and manpower are utilized in education.

The educational challenge which looms on the horizon is immense. Measured in numbers alone—numbers of pupils, numbers of teachers, numbers of buildings—it is staggering. When one considers that on top of raw population statistics, we have a growing demand for a larger percentage of the population to get advanced education, it becomes evident that the pressures upon us are compounded. Add to this complex the prospect for longer life and increased leisure time inherent in the simultaneous arrival of the atomic and electronic ages, each requiring more education of those who wish to continue as useful citizens, and you begin to sense the enormity

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SAMUEL M. BROWNELL *is United States Commissioner of Education and a long-time member of Phi Delta Kappa. This plea for more educational research was delivered before the 25th Biennial Council and 50th Anniversary Celebration.*

of the challenge which faces us. Just try to picture us as a nation of 200,000,000 persons, with the required work day, work week, and work year reduced materially and yet with a higher living standard than today; a nation relatively free of the economic, physical, and emotional handicaps which now cut down on school attendance; with all of us living to a ripe and active old age, and with all of us surrounded by an incomprehensibly complex world in which we are expected to do everything from understanding the peoples of the world, to operating electronic home appliances. If you can imagine such a life and what it means to education, you will agree with me that we are moving into an age whose complexity grows in geometrical progression, armed only with arithmetical formulas.

**Not Labor, but Leisure**

This may seem somewhat fantastic, but it differs only in degree from the kind of change we ourselves have witnessed in our lifetimes. Let me give you the words of one better able than most of us to comprehend the material implications of the future. General David Sarnoff said recently in looking over the next quarter-century:

> The very fact that electronics and atomics are unfolding simultaneously is a portent of the amazing changes ahead. Never before have two such mighty forces been unleashed at the same time. Together they are certain to dwarf the industrial revolutions brought about by steam and electricity. There is no element of material progress we know today—in the biological and chemical fields, in atomics and electronics, in engineering and physics—that will not seem, from the vantage point of 1980, a fumbling prelude.

Just what such developments may mean for education is no clearer to me than it is to you, but we need only look to the effects of the great industrial revolutions of the past to recognize that the impact will be enormous. Historically the great expansion of our common school system, the material growth of our colleges and universities, and the diversification of our curricula are all clearly traceable to industrial and economic effects of an earlier industrial revolution. This erudite audience will recall that the word school is derived from the Latin *schola* and the Greek *schole* meaning leisure, and we have it on the authority of General Sarnoff that "leisure . . . will be greatly extended" in the next quarter century, and that "not labor but leisure will be the great problem in the decades ahead." Stuart Chase has discussed the educational implications of the new electronic-atomic age, and has concluded that the great question is whether or not we can educate a nation to live a life which is not based upon work. To what extent shall we have to be prepared to educate our adults who, living ten to fifteen years longer than they now do, will want to put that time to profitable use? To what extent must we begin to educate our youth in an understanding of the whole world, in anticipation of the day when one can get to Thailand as readily as we got here? Well, we don't know. But we do know that we'd better be devoting systematic attention to these and myriad other questions raised by even a brief consideration of the future.

**Industrial and Educational Research Compared**

What are we doing as educators and as a nation to prepare ourselves and our schools for this great challenge? In a year (fiscal 1955) in which this nation spent over $35 billion to prepare itself for the possibility of a war which we pray will not come, our expenditures of $14 billion for school education of youth (for whom we are trying to prevent war) seem small. And when we examine what is being spent for research to improve educational efficiency we may well reflect on our sense of values. American industry, aware that the future, with all its promised changes, is closing in, is spending more than $3.5 billion for research and development work this year, according to a recent report of the National Science Foundation. I can't give you the amount we are spending on educational research this year in the United States, but the following figures suggest that the total would be relatively small. Excluding research for national security, the Federal budget for 1955 shows provisions for other research of somewhat more than $300 million, of which less than $500,000 was for research in the Office of Education. To put it another way, the National Science Foundation has estimated that the colleges and universities of the nation are spending some $350 million on research in the physical, life sciences, and social sciences; and that if every dollar spent on educational research could be tracked down and added to this, it would only change the last place of that 350 figure!

What I am saying, in short, is that we are not doing nearly enough in the field of education to insure that we will solve our immediately pressing problems, let alone be prepared for future developments. We may well consider possible reasons for this failure thus far to anticipate the needs of the future. There are several I wish to suggest. They must be understood if we are to move ahead as conditions compel us.

### Problems Facing Educational Research

First, there is the practical fact that the diffuse and diversified nature of our educational system—which is perhaps its greatest strength—makes it slow to respond to cultural change and we find ourselves laboring today to bring many of our schools up to standards generally established decades ago. The local school district is not suited economically or in terms of facilities to establish essential programs of research to solve the common and important educational problems of the nation. Secondly, the heavy financial burden of maintaining present practices and standards in the face of increasing school population is a great drain upon our resources. Yet we can all recognize that it is a penny-wise, pound-foolish attitude to withhold funds from research and planning on the grounds that today's problems are preoccupying.

Thirdly, I think we educators must accept some of the blame for the absence of long-range educational research. I am afraid that we as individual educators have failed to concern ourselves sufficiently with the essentials of our own problems. It is quite understandable that, because of pressing service needs, we have largely limited our studies to what I would call service-related, or applied researches. Furthermore, we have been satisfied to call as research evidence the relatively untested, preliminary findings of limited investigations. We have been chipping away at the periphery while neglecting basic core research. We have not been sufficiently rigid in much of what we have called research. We have tried to conduct research on a shoestring and our laudable efforts have often yielded high dividends on a small investment, but very meager contributions to the solution of our basic problems. This has exposed us to some justifiable ridicule and caricature in the academic world.

So long as there are problems which call for immediate solving, and so long as funds for basic research are wanting, this curse will be upon us. What I would plead for is not a diminution of service-related research, or of the best possible utilization of meager resources where they exist; but I would plead that practical economy and honest appraisal of the educational scene makes it abundantly clear that what is needed is the *addition* of larger-scale, basic research and applied research efforts.

### A Cooperative Program Proposed

It is not my purpose this evening to place blame for our educational shortcomings or to stress the obstacles to educational research. What I want to do is to consider ways and means of moving ahead without further delay in stimulating research of this particular nature.

Perhaps I should confine myself to what we have been doing and hope to do through the Office of Education. In recognition of the fact that the need for such basic research is a national concern, and because the federal government in establishing the Office and directing it to "promote the cause of education" gave it a clear responsibility to provide positive leadership in meeting the educational needs of the country, the United States Office of Education asked for and received from the Congress legislative authority to conduct a program of research in cooperation with the nation's colleges, universities, and state departments of education. We in the Office of Education have spent much time and effort in working out plans for such a program, with the full support of the Secretary of Health, Education, and Welfare.

We recognize the need to move ahead in three major areas of educational research.

First, we want to have researches undertaken into problems inherent in the housing and staffing of the nation's schools and colleges. We want not simply to find out how many classrooms and teachers we need or how we can best pay for these, but also to explore the possibilities of using our teachers and our classrooms more efficiently and effectively. We want to apply as much imagination and foresight as possible to these problems, which will be with us as long as we have schools and colleges. To you, I need not detail the potential for research here.

Also, we want to have research carried on which will make possible more efficient conservation and development of human resources through education. We want to make certain that every child in America develops as much through education as possible with benefit to himself and to our society. This means that we must explore the problem of identifying as early as possible the abilities of children, and of learning how—with the facilities we have or can provide—to bring about the wisest and best balanced development of each child. This holds true for the mentally retarded, the so-called gifted, and every other child. Only by thus improving the efficacy of education for *all* children can we hope to have a nation as strong—individually and collectively—as we must have in the years ahead of us.

Thirdly, we would examine the implications of our expanding economy and advancing technology for the future of education. How is it possible and prudent to develop the personal and vocational competencies which will be re-

quired by this world we do not yet understand? That is one of the most baffling challenges we face in the educational field, but we cannot wait until serious shortages of adequately prepared personnel exist before we start. Educational research must advance side by side with research and development in technology.

The Office of Education's research planning is designed in such a way as to enlist the talent and interest of colleges, universities, and state departments of education in the hope that it may capitalize upon research talent where it exists in the greatest quantities, and stimulate additional research efforts all over the country. It is our hope that Federal leadership and financial support of significant, careful, and systematic educational research will have the effect of strengthening all educational research and of bringing forth a flowering of interest in the central problems which face educators today.

### Must Transcend Applied Research

But such a step on the part of the federal government can achieve the important end it seeks only if it enlists the enthusiastic cooperation of all individuals and institutions ho share a concern for the future of American education. Certainly it must have the support of this audience, representing as it does the heart of our corps of educational researchers. And by cooperation and support I mean a determination to avoid dependence upon the research efforts of the federal government and a willingness to undertake—with whatever means at your command—to supplement and enlarge upon these projects. Needless to say, I hope that you will all put your imaginations to work in suggesting general areas and specific projects to which the Office of Education might direct its resources, for while we hope in our research efforts to step out in some heretofore uncharted areas, we recognize that the growth and effectiveness of research depend upon the competence and the ideas of educational researchers everywhere. Thus our relationship with you is a life line.

### The Ideals of True Research

I have made it clear that I believe our research efforts must be directed to areas of educational needs, but that they must transcend the limitations of what I have termed service-related or applied research.

Some of you may want to call to my attention the fact that every hour a teacher spends with a child can be educational research of a high order, in the sense that it is an exploration of education's greatest mystery—the mind of man. Similarly, the pursuit of the great liberal studies can be a systematic investigation of the human mind and spirit, and consequently a form of educational research. A citizens' committee working on the problem of financing a school, and a Ph.D. candidate investigating the importance of lighting to learning, may also be classified as research. It is not so much a question of *what* is studied, but *how* it is studied—and to what end—that concerns us in determining the significance of research, and in justifying the resources of talent and time and money we invest as we work together for greater progress in education through increased research.

I have little doubt but that resources for needed research in education will be made available in adequate amounts, and on a continued basis, if we demonstrate that we have persons who can and who do apply rigid discipline to their research efforts; persons who are more concerned that their findings are sound and will stand the most rigid testing than that they come out first with some answer; persons whose ideals are the ideals of the scholar everywhere, and whose major objective is to make his contribution, however small, toward the improvement of education.

The challenge to Phi Delta Kappa as an organization dedicated to leadership, service, and research is far greater than it was fifty years ago. The opportunities for its members in the field of education now are so much greater that one wonders whether the founders could possibly have foreseen the significance of their efforts. Certainly on this Fiftieth Anniversary occasion, it is appropriate that we rededicate the organization and our individual selves to the cause of bringing about more effectively and rapidly the improvement of education through research.

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Every now and then go away, have a little relaxation, for when you come back to your work, your judgment will be sure, since to remain constantly at work will cause you to lose power of judgment. . . . Go some distance away because then the work appears smaller, and more of it can be taken in at a glance, and a lack of harmony or proportion is more readily seen.—Leonardo da Vinci.

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Teachers in one California community pick outstanding citizens who have worked for the welfare of children, and award recognition for this service.

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"Be the opener of doors to those who come after you."—Ralph Waldo Emerson.

# Decision-Making in Secondary Schools

**The idea for this study originated in a joint program between the Horace Mann-Lincoln Institute of Teachers' College, Columbia University, and the West Orange, New Jersey, public school system. The main objective of that program was the development of leadership. In this writer's opinion, leadership or administration (the words are used here interchangeably) involved decision-making. The over-all purpose of this study, then, is to determine the decision-making processes used by secondary school principals in certain educational situations.**

*By* **ALAN H. WEISS**

WRITINGS OF Dewey, Drucker, and Van Miller showed certain patterns in decision-making or problem solving. Other authors felt there was an increasing need for administrators, in dealing with their problems, to understand and apply educational principles. From this background this study was developed. In addition, the study sought to determine the types of educational situations in which secondary principals must make decisions, some factors that might influence the decision-making process, and possible techniques in the decision-making process that may be of value to others.

In limiting the scope of the study the term "processes of decision-making" was defined as the method used in certain administrative situations when the principal is required to choose between two or more possible choices or actions to arrive at a conclusion.

It was decided to discover from principals how they actually make decisions. A questionnaire was devised which asked principals to:

1) Describe a recent educational situation of some significance in which a decision was required.
2) List the possible courses of action in dealing with this situation.
3) Describe the processes used in making a decision, considering all the courses of action and other factors involved.
4) State the decision.
5) Give evidence concerning its effect.

Four hundred and fifty questionnaires were mailed to secondary schools within the forty-eight states. Questionnaires were sent to five different schools in each of forty-seven states on a municipal population basis. This provided for geographical, urban, and rural representation. Every secondary school in New Jersey received a questionnaire. Principals were asked to complete the five sections when an educational situation arose in which they had to make a decision. Nineteen per cent of the principals responded. These responses came from twenty-three states. Municipal populations ranged from less than two thousand to more than two million. School enrollment ranged from less than two hundred to more than two thousand two hundred.

An analysis of the five sections of the questionnaire was then undertaken. This involved the use of many work sheets. Each was developed and improved on a trial and error basis. Certain ground rules had to be established in order to categorize the data within each section. The five sections were handled individually. Each section of each questionnaire was compared only to the same section of other questionnaires. The main action, idea, or process of each section was recorded. After the categories were established, a numerical tabulation was made.

### Situations Requiring Decisions

An introductory portion of the study tells who brought the educational situations to the administrators' attention. These are listed in order of numerical frequency.

1) Principals and sources not otherwise identified.
2) Faculty.
3) Students.
4) Outside groups such as service clubs, recreation and police departments.
5) Parents.
6) Superintendents of schools.
7) Boards of education.

Sections 1 of the questionnaire asked principals

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to describe an educational situation in which they, as principals, had to make a decision. In developing categories for this section an attempt was made to place similar descriptions together. Thus, it was entirely possible for one description to fit more than one category. Again, certain ground rules were developed. Presented in order of numerical frequency, these situations are: student behavior, class trips, curriculum, cafeteria, personnel assignments, scheduling, school relationships, student cars, report cards, club programs, fraternities-sororities, personnel relationships, rising enrollment, marks-grades, athletics, finances, standards of clothes and conduct, normal curve distribution, care of property, library usage, pregnancy, reading, bomb scare, national honor society, guidance, student withdrawal.

### Possible Courses of Action

After describing his educational situation (1), the principal explained the possible courses of action, as he saw them, that led to his making a decision. Principals, in deciding upon a course of action, usually mentioned more than one course of action.

1) Discuss the situation.
2) Make a self-decision. In doing this the principal most often described a "yes-no," "deny-grant" pattern.
3) Select a course of action from a range of choices. Usually this pattern developed into a choice among two opposite alternatives and an in-between path.
4) Allow the course of action to be determined by the original situation. Some of the situations presented indicated that a certain desired decision should be made. Then the courses of action lead to this desired decision.
5) Present problem to another authority for solution. This authority includes superintendents of schools, local and state boards of education, and educational specialists.
6) Present problem to advisory or faculty group.
7) State simply that no action is to be taken.
8) Describe courses of action with methods for administering these courses into action.

### Processes Used in Making a Decision

The situation (1) was referred to the principal. He or she then listed possible courses of action (2). In this portion of the study are the categories which list the processes used in choosing among possible courses of action in order to begin making a decision. Some principals expressed use of more than one category.

1) Discussed the situation with those involved.
2) Sought professional help.
3) Used a policy-making or advisory group.
4) Discussed it with the faculty.
5) Continued to weigh the values of a decision and consider other influences and forces.
6) Used listed possible alternatives, and then used a process of elimination.
7) Took problem-solving action.
8) Solved the problem at this point.
9) Determined by the original situation.

### The Actual Decision Is Made

At this point the principal was in a position to arrive at a decision. In answering the questionnaire, principals described an educational situation (1). To the question, "What decision did you make?," he gave his actual decision to the original situation. These actual decisions were not recorded. What was recorded was how the final decision was made.

1) Over half of the principals made themselves responsible for making the final decision. In most cases they chose from among the possible alternatives presented in arriving at a decision. In a few cases principals had been limited to choose among certain alternatives as prescribed by a group.
2) The final decision was made with the aid of an advisory group.
3) The principal talked the problem over with those involved. In a few cases those involved were allowed to arrive at their own decision.
4) The principal called for a faculty vote and abided by the rule of the majority.
5) The principal met with the board of education in arriving at a decision.
6) The principal simply stated, and then abided by, the decision as previously worked out.
7) The principal discussed the pros and cons with the faculty but did not enforce any decisions.
8) In a few cases no decision was possible.

### Evidence Concerning the Effect of the Decision

After a decision has been made and put into action, it is important to know how effective or worthwhile the decision has been.

A) Over half the principals thought the decision made was worthwhile. It is interesting to note that the following factors determined worthwhileness:

1) Reaction of student and/or parents.
2) Support from teacher and/or students.
3) Better understanding on the part of teachers.
4) Attitude of those involved.
5) Establishment of a better curriculum.
6) Better use of facilities.
7) Decrease in number of violations.
8) The process used prevented a further issue from being raised.
9) The decision relieved the original situation.
10) It works!

*(Concluded on page 210)*

# Impressions of White House Conference

*By* **EMERY STOOPS**

NEVER IN HISTORY has any government been so concerned about the program and function of public education that it has financed an *ideas* conference of personages from all religions, occupations, philosophies, and geographical areas. Epic-making in its inception, the White House Conference on Education evidenced one of the highest attainments in democratic action by tapping and unifying a diversity of viewpoints.

The issues studied were not dreamed up by a committee. They are inherent and inescapable. The committee merely discovered and phrased them as follows:

1) What Should Our Schools Accomplish?
2) In What Ways Can We Organize Our School Systems More Efficiently and Economically?
3) What Are Our School Building Needs?
4) How Can We Get Enough Good Teachers—and Keep Them?
5) How Can We Finance Our Schools—Build and Operate Them?
6) How Can We Maintain a Continuing Public Interest in Education?

The Conference, held November 28-December 1, last, was preceded by 53 state and territorial conferences convened earlier to study the issues just named. The issues and much background material were widely publicized prior to the national meeting.

### Organization and Functioning

The Washington meeting was a *conference,* not a convention. When two minority groups sought floor debate and resolutions, Neil H. McElroy, chairman, and president of Procter and Gamble, wisely ruled them out of order. This procedure minimized haggling, sensationalism, and political maneuvering. Thus the delegates were freed and encouraged to concentrate upon professional issues.

General meetings, round table discussions, and reports comprised the conference. The planning had been done by a general committee of 39, named and headed by Dwight D. Eisenhower as honorary chairman, with Neil H. McElroy as acting chairman. Sub-committees prepared specific questions around each of the six issues.

To study the issues and answer the questions, 166 tables of eleven persons each deliberated for two and one-half hours on each issue. The 166 chairmen carried the written reports to 16 tables for development, refinement, and reconciliation. The chairmen from the 16 tables met at two tables for further processing, and one chairman from these two tables made the final report on the issue to the general session.

This kind of organization made for smooth functioning. It facilitated the evaluation of ideas directed to the President. The flow of ideas began with proposals, continued with processing and revision, and ended with a "distillation" of the proposals of 2,000 delegates from 166 tables.

### Program and Personnel

Homework in the form of state conference reports and the research data prepared by the subcommittees prepared the delegates, comprised of one-third educators and two-thirds laymen.

General sessions featured such speakers as Dwight D. Eisenhower in a film recording, Richard M. Nixon, Neil H. McElroy, Dr. Samuel M. Brownell, Marion B. Folsom, and the sub-committee chairmen introducing the six issues.

Mr. Eisenhower's film recording portrayed the President in a strong, healthful, convincing manner. Mr. Nixon departed from script to report that Mr. Eisenhower looked as well in person as he did by film. "We are faced today," said the President, "with the grand problem of providing a good education for American youth."

He said that education must be free and uncontrolled nationally. The President stressed the role of the private citizen, the locality, the state, and the federal government, by indicating that the federal government should provide money and credit where needed, but not to the extent of reducing local interest and initiative.

Mr. Nixon, flanked by members of the President's Cabinet, received two standing ovations and hearty applause. He spoke both from script and extemporaneously, showing broad and pene-

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trating knowledge of educational problems. "Salaries paid to teachers are nothing short of a national disgrace," Nixon said. He urged gratitude and recognition for those who guide America's children.

In suggesting federal help with local control of curriculum, Mr. Nixon said, "Diffusion of power is the best defense against tyranny."

"If the crisis in education is not met, we may lose the cold war by default," said Nixon. At the close of his address, the Hawaiian delegation presented the Presidential party with leis and kisses. Mr. Nixon showed further interest in the conference by giving a reception for all delegates in the National Art Gallery and by appearing at the California dinner.

Mr. McElroy stressed the role of education in defense by saying, "We must have good education for survival." Dr. Brownell and Mr. Folsom stressed the values of the conference and assured delegates that their reports would be helpful guides in the months that follow.

The round table discussion groups included governors, congressmen, housewives, farmers, executives, labor leaders, Protestants, Catholics, Jews, educators, both colored and white. Remarkable harmony prevailed at the tables, despite some regrettable press distortions of disharmony. The press stressed two proposals from the floor which consumed a total of less than 10 minutes' time, and overlooked treasures of productive effort which consumed more than eight hours. The press in general oversensationalized discussions of federal aid and ignored what 30,000,000 youngsters should be taught, what kind of teachers they should have, and the quality of buildings needed for their school homes.

The caliber of conference personnel was of the highest, their harmony surprising, and their production profound. It will take much face-to-face contact back home to tell the people the *true* story of the White House Conference which some excitement-seeking press reports garbled.

### Some Outcomes

The conference produced a wealth of *ideas* on the six issues for the President, legislators, professionals, and laymen. A technique of evolving and refining solutions to problems was born by capitalizing upon the knowledges and skills of many disciplines. "One out of many" fit the progression of ideas when professionals and laymen talked to each other.

History alone can judge the worth and reach of this conference. Much will depend upon what the delegates do back home. The battle for better schools must be fought in the 59,000 school districts in 53 states and territories. Ideas and good attitudes were generated by 2,000 delegates in Washington. The rest is up to *us*.

### Recommendations

Your immediate Past-President and delegate recommends that:

1) Every Phi Delta Kappan read the full text of the Conference report.

2) Educators assume leadership in organizing study groups in every community, state, and territory.

3) Phi Delta Kappans urge local editors to play down sensationalism in favor of factual reporting.

4) Local school issues be added to the Conference list for study.

5) Expressions of satisfaction be sent to President Eisenhower, Neil H. McElroy, and Clint Pace, director of the Conference.

6) A second White House Conference on Education be held in 1959.

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## DECISION-MAKING IN SCHOOLS

*(Concluded from page 208)*

B) There were still some evaluations to be made.

C) Principals thought no evaluation was possible.

D) This category represents those principals who made no evaluation.

E) Principals were not pleased with the decision made.

The next step in this study will be to determine any possible patterns in the processes of decision-making. Is there any uniformity in the processes by which principals make their decisions?

The third step will be the inclusion of cases, obtained from the questionnaire, which illustrate the data presented in this study. If patterns are discernible, they will be illustrated in a similar manner.

The final step will be a discussion of possible factors influencing the decision-making process.

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[Editor's Note: This article was sent in by the author in answer to the challenge in our November editorial to submit partial data for evaluation, criticism, and study by professional peers while completion of a study is under way. The author invites such responses.]

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"The record of the National Congress is the record of its nationwide effort to build up a public opinion informed enough and strong enough to get done the things that need to be done."—Overstreet, in *Where Children Come First.*

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One out of every five pupils goes to school in a schoolhouse which does not meet minimum fire safety conditions.

# Jack Be Nimble!

**The nation's vocabulary is richer this year by a word which is repeatedly appearing in technical journals, business weeklies, newspaper articles, and political speeches—a fabulous word which is materializing like a genie in a 20th century fairy tale. This word is "automation," and the industrial and business era which it presages offers all the magic of the *Arabian Nights, Grimm's Fairy Tales,* and *Mother Goose* combined in one volume. The coming age of automation is praised by management, feared by labor, and viewed with interest by everyone. Here we take an educator's look at automation; scrutinize its premises and its promises; and survey briefly its implications for secondary education.**

*By* **NORMAN HARRIS**

ANY NEW WORD is as frequently misused as it is properly used, and certainly "automation" is no exception. A word which has no established etymology must acquire exactness of meaning through use and through a careful analysis of the processes or things which it purports to describe. So it is with "automation," which is a word not yet stabilized in meaning, a word for which a *feeling* or an *appreciation* must be developed rather than one for which a definition may be memorized.

A somewhat restricted meaning relates "automation" to production processes only, and refers to the use of automatic machines with self-energized electronic controls which turn out fabricated articles at unprecedented speeds with a minimum of human supervision. The production engineer regards automation in this light, and the phrase "Detroit automation" has been coined to describe these processes.

A far more general concept is that advanced by those who feel that automation is an organizational method which encompasses the entire structure of a business. This view of automation conceives of all economic activity as an integrated process applied not only to production but to all phases of corporate endeavor.[1] The unifying principle of the automation idea is that wherever it is found—in production, in marketing, in business office procedures, in inventory control, or in research, it encompasses the principle of *self-regulating control,* or in other words it contains within itself the means for controlling itself.

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This expanded view of the "automated" business or industry implies that raw materials procurement, research, production, marketing, shipping, inventory control, billing—in fact all the operations essential to corporate existence—are so closely interrelated that each controls the others. Automation, in this larger sense then, is not merely a means of *making things* faster and better with fewer workers, but is a method, in fact almost a philosophy, for the over-all conduct of corporate business.

Whether one accepts the restricted view of the production engineer or the more philosophical concept of the economist, there is one basic principle of automation which holds true throughout, and which must be understood, at least at the level of *feeling* if not by a technical knowledge of the actual process. This basis for automation lies in the fact that the operation—whether it be a machining process on engine blocks or a complex inventory control problem—must contain its *own means of regulation and control.* Set standards of accuracy or performance of the product become an integral part of the automated process and these are used as gages to control production. Many electronic circuits are so controlled, and the term, "feed-back" is used to describe the control process. When a process regulates itself by a "feed-back" from its own product, that process is said to be "automated."

## Electronics and Automatic Computers

Students of elementary electronics will recall the operation of the three-element vacuum tube,

[1] For an excellent presentation of the economist's concept of automation see Peter F. Drucker, "The Promise of Automation," in *Harper's Magazine* for April, 1955.

or "triode." A coated *cathode* is heated and electrons (negative) "boil off" and are drawn to the positively charged *plate*. A third element, the *grid*, is placed between the cathode and the plate and varying voltages (positive or negative) may be applied to the grid to control the flow of electrons in the cathode-plate circuit. There are, of course, many methods of grid control of vacuum tubes. One method is to "feed-back" to the grid a portion of the output of the tube in such a way that the tube is controlled *by its own output*. The feed-back principle has been applied in electronics for several decades, but its application to other processes is of rather recent origin.

There is much speculation, and certainly considerable evidence to support it, that the feed-back principle applies to certain human thought processes.[2] Furthermore, recent discoveries in the fields of human relations and group dynamics offer the interesting possibility that interaction between individuals and the behavior of individuals in groups may also possess some elements of the "feed-back" principle.

Since the "feed-back" idea originated in electronics, it is natural that the first significant application of the principle to automation occurred in processes for which electronic controls could be provided. One of the earliest and most fruitful fields of development was in the manufacture of electronic computers. The first really successful electronic computer was put on the market only five years ago, in 1951. Since that time a score of companies have entered the electronic computer field and today these "magic brains" are available in a range from desk calculators to the enormously complex "data processing machines" which may require a space as large as a six-room house for their installation and operation.

The fantastic speed and accuracy with which these machines work is a matter of fairly common knowledge. A few examples will serve to illustrate how they are being applied to modern business and research.

On the east coast the U. S. Navy has recently placed in operation the Naval Ordnance Research Calculator (NORC), designed for the solution of the largest computational problems of science and technology. The complexity of the problems which NORC will solve cannot be discussed here but its speed and accuracy on complex problems may be inferred from its amazing performance on a problem in simple arithmetic. NORC will, for example, multiply 2368.912941062 times 867124.0510296 and obtain the answer to 16 places of decimals in 31 millionths of a second! Problems in rocket design, jet performance, underwater turbulence, steam turbine performance, naval gunnery, and guided missile research are solved by NORC in a matter of hours, with a small staff of mathematicians and operators, each operation following the other at a rate of 15,000 per second or a billion in less than a 24-hour day. This rate is equivalent to that of one thousand trained people computing for a lifetime!

Although NORC is one of the most elaborate computers engaged in research today, there are hundreds of other almost as complex distributed over the nation in other military and government laboratories, in universities, and in research laboratories of private corporations.

Here are some examples from the field of business. A large west-coast public utility whose franchise serves the Los Angeles basin and a large portion of southern California, does all the customer billing and accounting for its more than two million residential and industrial accounts with an electronic data processing machine (EDPM) installation. Punched cards are the input (prepared from meter-reader records) and two million bills a month are computed, printed, folded, and stuffed in envelopes ready for mailing without being touched by an office worker. In addition, the EDPM keeps a record of daily accumulated cash receipts, a weekly and monthly accounts receivable record, and prepares tax information for the hundreds of taxation districts in which the company operates.

American Airlines has in its New York offices, a special purpose computer whose job is to keep track of reservations on the company's flights. Any one of scores of ticket offices throughout the New York area can quiz the central drum of the Magnetronic Reservisor to see whether seats are available on any one of the company's airliners for a flight leaving today or for one leaving a week or a month from now. A light flashes on the keyboard at the interrogating station and tells how many seats are available. When a reservation is made a clerk keys the information to the Reservisor, which automatically reduces the number of available seats by the number just sold. American Airlines estimates that the Reservisor is interrogated some 35,000 to 40,000 times daily.

The Bank of America has recently installed in some of its larger branches a computer designated ERMA. Checks currently being issued for use with ERMA are made of a special metal-impregnated paper. Each check has an unique magnetic circuit built in which identifies the account which issued it. When these checks are cashed at

[2] For an interesting, though highly technical treatment of this subject, see Norbert Weiner, *Cybernetics*, John Wiley and Sons, New York, 1948.

the bank, they are fed to ERMA, and the machine sorts, clears, checks against the customer's account, and prepares his monthly statement. Naturally, this system is feasible at present only for large accounts which may require the clearing of thousands of checks monthly.

### Automated Industrial Processes

Computers, or "electronic brains" may get most of the headlines, but they constitute only one phase (and perhaps not the most important one) of automation. An industry is not truly automated if only its research and accounting departments are automated. Materials handling, machining, assembling, packaging, warehousing, and inventory control must all come under the automation concept before the truly automated business is a reality. Much progress is being made in these fields, as the following examples will show.

Automation of machining processes has been dubbed "Detroit automation." Engine plants at Ford, Oldsmobile, and Pontiac are good examples of Detroit automation. Ford and Oldsmobile, for example, have automated lines for machining engine blocks, wherein a linked battery of machines, controlled by a maze of feed-back circuits stretches out for more than 1500 feet in length. Automatic machine tools perform more than 500 boring, broaching, drilling, honing, milling, and tapping operations, all in proper sequence and then deliver the finished block to the assembly line for the insertion of pistons, bearings, and other associated components.

Pontiac has recently added to its production facilities an automated piston manufacturing line designed to produce 2,000 finished pistons an hour without a single one being touched by a worker's hands. Even the job of inspection and rejection of sub-standards is handled by the "line" itself. Man's only function is repair and maintenance of the machine tools and electronic controls.

Bendix Aviation Corporation has recently installed an ingenious battery of automated machinery which starts by scanning the blueprint of the part to be manufactured, sets its own gages, jigs, and tolerances, and proceeds to perform all the necessary operations (forging, tooling, grinding, polishing, inspection, and rejection) through to the finished product. The worker's only function is to see that raw stock is supplied to the line.

One of the earliest applications of automation was in the continuous-flow process industries, such as petroleum and chemicals. An oil refinery today is perhaps the best example of a fully automated enterprise. Towers rise twenty stories high, connected by a maze of multicolored pipes of many sizes, with valve and gage arrangements whose complexity defies description. Every day, in a large refinery, a half million barrels of oil may flow (unseen) into the refinery and flow out in the form of hundreds of finished petroleum products, all untouched by human hand and unseen by the human eye. The central control of this operation is the main panel usually located in or adjacent to a spotless laboratory building. Here are the controllers (500 or more), the valve position indicators (1500 or more), the temperature indicators (1800), the recorders (800), and the combustion control indicators. All of these and many more may be under the surveillance of just a half-dozen men per shift. Finished products from the stills and "crackers" are routed through pipes to certain buildings where packaging, marking, and shipping are also fully automated processes. It is literally possible to work in a large oil refinery for months, in almost any department, and actually never see a single drop of oil, or for that matter any of the finished products, except in their final containers.

It is difficult, if not downright foolhardy, to forecast trends in automation at this time, but the areas of most promise for the immediate future appear to be:

1) In the continuous-flow process industries, such as petroleum and chemicals.
2) In the field of "Detroit automation," where repetitive machine operations are performed on a series of nearly identical articles over many months of operation.
3) In the field of research and design, including research by universities, military laboratories, and private corporations.
4) In business offices of large companies.[3]

It is these fields then, which we shall keep in mind as we attempt to assess the impact of automation on secondary education.

### Automation and Education

What kind of education will the new era demand? What sort of graduate will be most successful? It is certainly too early to discern clearly the final pattern of employment which automation will bring, but certain broad outlines appear to be emerging. As a business applies automation to its operations the repetitive jobs—even the highly skilled ones—are taken over by machines. Men and women become the supervisors of machines. Fabrication and assembly jobs which previously furnished continuous employment for

[3] For a comprehensive treatment of the probable future of automation in many industries and businesses, see John Diebold, *Automation*, D. Van Nostrand Co., New York, 1952.

workers at various skill levels will, under Detroit automation, be performed by machines under the watchful eye of a few technicians. In the continuous-flow process industries, where automation has made its greatest contribution, very few jobs remain for unskilled or semi-skilled employees. As business offices become automated, machines will take over most of the sorting, filing, typing, accounting, computing, billing, and addressing jobs which are now filled for the most part by girls and women trained in the business education departments of our secondary schools. Business office and research workers at the professional level, such as accountants, mathematicians, and analysts will see much of their routine calculating work taken over by automatic computers.

At first thought it would seem that automation may cause considerable unemployment at all levels from unskilled labor to semi-professional and professional workers. This grim picture has indeed been sketched and shaded in by certain leaders of organized labor. Management, with a different perspective, has countered with the opinion that no serious unemployment will result. Automation will, says management, result in considerable shifting of workers, perhaps from one employer to another, and certainly from routine jobs to more complex jobs with the same company. Management admits that a certain amount of "dislocation employment" may exist temporarily during the changeover from mechanization to automation, but that in the long run over-all employment will be greater than ever. It is pointed out that hundreds of thousands of new jobs will be created by the expanding electronics industry, in designing, fabricating, and servicing the equipment which will make automation possible. Furthermore, it is contended that just as mechanization gave men release from back-breaking toil and simultaneously raised living standards, so automation will release workers from dangerous, dirty, and boresome jobs and will bring with it another significant jump in the standard of living.

It is not for the educator to say which of these two positions will more nearly represent the labor situation five years hence. It is for the educator to recognize, however, that educational and training patterns as now organized in most secondary schools are not well suited to either of these "crystal ball" pictures of the coming era.

### Implications for Secondary Education

Certainly one signpost can be seen clearly. Appearing upon it in bold relief is the directive that our graduates must be educationally more nimble than ever before. They must be able to adjust to dislocation unemployment and rapidly learn the new skills which a new job demands. The new job may necessitate a move to another community or to another state, with associated demands on the ability to adjust economically and socially to the new locale. New problems between labor and management will arise and old ones will still require solution. Workers and managers alike must have a common background of education for citizenship which will help to minimize tensions which automation may bring or accentuate. Secondary schools should emphasize even more than they have been doing a common core of "general education" for effective citizenship. English, mathematics, geography, history, economics, psychology—all should be taught at the level of the student's ability, *to all students!*

Automation will probably bring an even shorter week than the present forty hours, so we must actively begin to do something about a project that we have been writing and talking about for four decades—education for the *worthy* use of leisure time. As a nation we do too much watching, and not enough participating. Evening after evening is spent in front of the television screen, and the five-hour double feature movie are fixed patterns of living for millions of Americans and certainly much of this leisure is not worthy of the time spent. We taste adventure vicariously, but do not allow ourselves the real joy of engaging in it. Schools and colleges can help here by de-professionalizing interscholastic athletics, where thousands watch and few play, and by providing an expanded program of games and hobbies in which all can participate. Tennis, golf, skating, bowling, hockey, chess, music, rifle clubs, hiking, and intramural sports all have participation values for carry-over into life after graduation; while football, and certain other "major" sports do not.

Shifting now from general to more specific educational problems, let us consider automation as it relates to some of the areas of education with which secondary schools are normally concerned.

Business education departments must scrutinize their curriculums with a particularly critical eye. The automated business office is not coming—it is here! If we assume a good background in the core courses discussed above, what skills should the business curriculum develop? Typing is basic, of course, but methods and typewriting machines will change. Shorthand will probably still be desired by many employers, but probably only at the secretarial level. Accounting will become increasingly automated, even in the small business office.

It is impossible, of course, for secondary school business courses to train students on a wide vari-

ety of business machines and automatic computers, because of the expense involved, but some training on basic business machines should be given to all business students. An office machines laboratory, even in a small school, should contain several modern mechanical calculators, adequate dictating and transcribing equipment, one or more bookkeeping machines, duplicating machines of two or three types, and if the budget will permit, an electronic desk-type computer. Automation will increase the need for field trips by business education classes, and should spur the development of work-experience programs for vocational business students.

Industrial arts departments, and trade and industrial departments have a vital responsibility in the age of automation. It is from these curriculums that the vast majority of industrial workers and tradesmen come. The time-honored trades and crafts will still be needed—machinists, welders, carpenters, electricians, mechanics, and machine operators—but the workers will do things in new ways with new machines. No school program can possibly train all the trades on all the machines, or in all the skills which will be needed. Here again we see the need for educational flexibility. Teaching methods, course content, shop layout, machinery purchases, related instruction, work-experience—all must be planned to give the student a broad understanding and some basic manipulatory skills which will enable him to meet the demands of his job—demands which will be ever-changing, and which may indeed require him to "jump over the candlestick." If any one thing can be said with certainty, it is that every student in the industrial curriculums should be given a basic course in the field of electricity and electronics. The level of difficulty here is a problem, of course, but new ways of teaching may overcome that. Schools can well take a leaf from the book of the military forces and use films, demonstrations, and "mock-ups" to make abstract ideas come alive as they take form and substance before the eyes of the non-academic learner.

There are, of course, some industries and occupations which automation will not affect appreciably, or at least not for many years. Agricultural production is today highly mechanized, but it is doubtful whether it will become automated to any considerable extent. The processing of agricultural products, however, and the business of farm marketing are already feeling the impact of automation.

Sales and service jobs by the millions will continue to exist. In fact, as automation brings expanded production, these jobs will increase, not only in number, but in percentage of workers.

There is little evidence that automation can be applied very soon to the construction industry. The many trades and crafts which this industry encompasses may note little effect on their jobs from automation for some time to come. A like situation exists in the transportation industry. Railroads, truck lines, shipping, and air lines are *mechanized* to a high degree and automatic controls are applicable to some operations in the industry. However, the day when trucks, trains, commercial aircraft, or ships can be dispatched to their destinations, and be loaded, unloaded, serviced, and repaired automatically seems far in the future, indeed.

The entire field of professional work, with the exception of engineering and research, may go relatively unaffected by automation. Attorneys, physicians, teachers, scientists, nurses, architects, ministers, social workers, will have to bring the same knowledge, techniques, and skills to their jobs as they have in the past. There is little likelihood that automation of itself will cause any permanent or even temporary unemployment in most professional fields.

The exception noted was in the fields of engineering and research. Here automation may demand markedly increased numbers of *certain types* of engineers and research personnel. Electrical, electronics, and mechanical engineers will be needed by the thousands and methods analysts will be needed in increasing numbers for the complex job of analyzing production and business problems and "translating" them into forms which control mechanisms and computers can "understand."

### Technical Education

Automation may bring the greatest expansion of all to the engineering-technical family of jobs. At this level are jobs for the hundreds of thousands of technical graduates which automation will demand. Electrical technician, electronics technician, laboratory technician, power station operator, tool and die designer, hydraulics technician, materials test technician, draftsman, engineering aide—these are just a few of the jobs in which even now workers are in extremely short supply. A glance at the "Help Wanted" classification of any metropolitan newspaper reveals column after column of advertisements for job openings in these fields. We are falling short by fifty thousand a year in meeting the demand for engineering-technical graduates *at the present time*, to say nothing of the needs which automation will bring in the next decade.

### General Conclusions

What general conclusions then, can be drawn for educators in charge of curriculum development? Certain basic principles seem clear enough. Automation will require:

1) More general education, including a basic core-curriculum for effective citizenship. This must be offered to all students, at a level commensurate with academic ability. This core must include *more mathematics and science* than have been required of secondary school students in the recent past.

2) A continuing emphasis on excellent preparation for professional training, including business administration, and training for management.

3) At the level of preparation for skilled and semi-skilled jobs, an emphasis on flexibility, on *educational nimbleness*, so that graduates can adjust more readily to the changing job patterns that automation will bring.

4) A tremendous expansion in the field of technical education, at the junior college and technical institute level.

5) Expanded work-experience programs, in co-operation with industry and business.

6) Adult education programs undertaken cooperatively with industry, for retraining and up-grading of workers. These should be combined with industry-provided on-the-job training.

7) More effective guidance and orientation programs, adequately staffed to do the all-important job of helping students make the right choices—choices consistent with their interests, their abilities, and the realities of the world of work after graduation.

8) Continuous analysis by school staffs of their industrial and business communities. Periodic community occupational surveys must be made and used to guide the educational program.

9) Placement and follow-up of graduates. How well is our "product" meeting the standards set for it?

10) Continuous curriculum evaluation and curriculum development to correct deficiencies in our "product."

Automation holds the promise of a brighter future for us all. Industrialists and businessmen are studying its potentials for research, production, marketing, and finance. Labor union leaders are keenly aware of the problems it may pose for some segments of their membership. Political and government leaders are sensitive to its implications for the national welfare and for national defense. Certainly, educators can do no less than to keep themselves well informed on automation, for ours is the biggest concern of all.

The aircraft industry has had for years a well-known design and production problem inherent in the five-year time lag between the writing of specifications for a new airplane and its final acceptance as a tested and operational aircraft. The industry is almost forced to accept the fact that before an airplane becomes operational, it is already obsolete. Is there an unpleasant parallel here? As our graduates march from the rostrum into the automation era are they also already obsolete? If so, who will make them operational? As educators, isn't that our job?

## THE EDUCATIONAL CALENDAR

**FEBRUARY**

International Conference on Educational Research, under auspices of American Educational Research Association, Atlantic City, New Jersey, February 13-21.

American Association of Colleges for Teacher Education, NEA, Annual Convention, Chicago, February 16-18.

National School Boards Association, Atlantic City, February 16-18.

American Association of School Administrators, Atlantic City, February 18-23.

Department of Rural Education, NEA, Annual Meeting, Atlantic City, February 18-23.

National School Public Relations Association, NEA, Mid-Winter Meeting, Atlantic City, February 19-23.

American Educational Research Association, Annual Meeting, Atlantic City, February 20-22.

Joint Meeting: United Business Education Association Research Foundation; National Association of Business Teacher-Training Institutions, UBEA; Administrators Division, UBEA; and U. S. Chapter, International Society for Business Education, United Business Education Association, NEA, Chicago, February 21-24.

National Association of Secondary-School Principals, NEA, Fortieth Annual Convention, Chicago, Feburary 25-29.

**MARCH**

Association for Higher Education, NEA, Annual Conference, Chicago, March 5-7.

Department of Elementary School Principals, NEA, Annual Meeting, Denver, March 7-10.

Department of Audio-Visual Instruction, NEA, National Convention, Detroit, Michigan, March 12-17.

National Science Teachers Association, Fourth National Convention, Washington, D. C., March 14-17.

Association for Supervision and Curriculum Development, NEA, New York, March 19-23.

National Association of Deans of Women, NEA, National Convention, Cincinnati, Ohio, March 22-25.

American Association for Health, Physical Education, and Recreation, jointly with Midwest Regional Conference, NEA, National Convention, Chicago, March 25-30.

American Personnel and Guidance Association, Annual Convention, Washington, D. C., March 25-29.

# A Further Study in School Organization

**Present organizational theory goes beyond formal structure and considers the area of "feelings" and "attitudes" of individuals as providing a truer picture of administrative organization.[1] The atmosphere or climate of decision-making is conceived as the important aspect of organizational structure. Although this is an aspect which is rather difficult to measure, it is a vital force which makes it possible to formulate and carry out the program of the school.**

*By* **DOUGLAS R. BEY**

INCREASED SCHOOL enrollment is an important reason for directing public attention to school services and to its organization. Immediate problems of providing adequate housing and staff must be faced. In order to arrive at suitable solutions to individual school problems, many evaluations of past and present programs are needed. Requirements for graduation, objectives of individual courses, and types of extra-curricular activities must be considered in relation to the over-all objective of meeting the needs of youth and society.

Occupying a central position of responsibility in providing a good school is the administrator. This means that some basic decisions must necessarily be made by the professional school administrator. A major problem is how to utilize the present staff and to make the best use of public support and help.

Cornell reported on the results and implications of several studies which gave empirical evidence in support of the importance of the area of feelings in school organizations.[2] A next step in relating results of these studies to school productivity was implied by Cornell in this article:

> The organizational environment of the school system is real and tangible and it has real and tangible effects upon the performance of the school. Much of our educational theory, however, is untested. Our experience clearly suggests that more penetrating research in this area is possible and promising. The subject matter is of course difficult because it is complex. The kinds of empirical knowledge which may be expected in this area certainly will not be of the "either-or" variety common in educational literature.

The scope of the present article is to outline the methods and to make available the major findings of a recent study of school organizations.[3] This study directs attention to the problem of measuring the climate and environment of decision-making and to the importance of such a measurement. In this study Bey points out how such a measurement is similar to earlier advances in measurement:

> The introduction and widespread use of group tests of intelligence during World War I was of tremendous importance in education. Of real value was the greater understanding of the differences in pupils with respect to scholastic aptitude. In a similar way this investigation supplies empirical evidence that school systems are different with respect to variables related to administrative organization. In addition each variable of the set is ranked as to its importance in discriminating between school systems. A clarification of the current situation in a particular school is essential in planning a new direction or change in the program because this new direction or change necessarily implies a need for cooperative effort and for the utilization of the abilities of personnel.

## DATA AND MEASURES

Data for the present investigation were made available by the Bureau of Educational Research of the University of Illinois. The instrument used for obtaining teacher-data is called "The Teacher Participation Inventory." This inventory, taking about forty-five minutes to complete, was administered by trained personnel of the Bureau who had also cooperated in the development of the instrument. The instrument was designed to

DOUGLAS R. BEY *is a member of the staff of the department of mathematics, Illinois State Normal University, Normal, Ill.*

[1] Francis G. Cornell and Darrell J. Inabnit. "Administrative Organization as Social Structure," Progressive Education 30:29-36; November 1952.

[2] Francis G. Cornell. "Socially Perceptive Administration," Phi Delta Kappan 36:219-223; March 1955.

[3] See Douglas R. Bey, "Modified Discriminant Analysis of School Organizations." Urbana, Illinois: University of Illinois, 1954. 105p. (Doctor's thesis).

obtain an objective measurement of the way teachers participate in matters of general concern to their schools. The six scores obtained from the inventory may be classified into two groups: the first four measures deal with the amount and kind of participation, while the last two are sensitive to teachers' perceptions of the climate or environment of decision-making. For the purposes of the study the set of measures are named and numbered as follows: (1) Activity; (2) Responsibility; (3) Interaction; (4) Influence; (5) Administration; and (6) Morale. The first four measures are based on fourteen inclusive areas of possible teacher-participation; discipline, promotion, reports to parents, teacher welfare, pupil welfare, evaluation, textbook selection, curriculum, teachers' salaries, professional growth, physical plant, school schedule, organization, and community relations. After a consideration of each of these areas, a decision is made as to the amount of activity, the extent of responsibility, the kind of interaction, and the degree of influence. This decision is indicated as one of five possible choices which are described in a code sheet accompanying the Teacher Participation Inventory. Two of the choices are grouped for each of the measures; thus it is possible to quantify a teacher's choice from zero to three. For example, a large amount of activity is given the score three, whereas, no activity is scored zero. The amount of responsibility is judged by such things as teacher-participation on committees working on school-wide problems. A teacher's perception of the seriousness with which the administration considers her proposals is reflected by the influence measure. A large amount of responsibility and considerable influence are reflected by high scores on these two measures as in the case of the amount of activity. Kind of interaction is scored highest when the teacher deals directly with the administration or with the board of education while she is working in one of the areas of teacher-participation. In order to obtain an evaluation of administrative procedures, teachers were asked for an estimate of their superintendents' method of dealing with matters of general concern to the school system. A scoring pattern similar to that used for the participation measures is followed. Administrative procedures are listed for each of six statements dealing with problems of general school concern and indicate the degree to which the administration seeks the help of teachers in decision-making. A school system would rank high on this measure if there were an efficient utilization of a well-informed staff in matters of school policy. A means of measuring an aspect of morale is found by asking teachers how well they are satisfied with their existing relationship to the administrative organization. This measure is also in the area of the climate or environment of decision-making and is sensitive to interpersonal relationships. The estimates of the various correlations of these six organizational measures are shown in Table I. These correlations indicate a grouping of the first four measures and the last two and suggest that these two groups measure different aspects of administrative organization.

**TABLE I. COMPARISON OF THE CORRELATIONS OF THE SIX ORGANIZATIONAL MEASURES[a]**

| Measures | Measures | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | | H | H | H | O | L |
| 2 | | | M | M | O | L |
| 3 | | | | H | O | L |
| 4 | | | | | ?[b] | L |
| 5 | | | | | | M |

[a] This comparison uses the following arbitrary definition of symbols:
O: little or no correlation
L: low correlation (.10 to .30)
M: medium correlation (.30 to .60)
H: high correlation (above .60)
[b] An estimate of this correlation was impossible because it was significantly different in the four populations.

## STATISTICAL ANALYSIS

It is assumed that the organizational measures have multivariate normal distributions for each of the four community school districts of Douglas County. The true situation of a particular school system with respect to a given set of organizational measures would be apparent if the set of population parameters were known. The difference in the organizational structure of these school systems would be indicated by the various population parameters. If these parameters were known, for example, the distances between the school systems as well as the relative importance of the measures in characterizing school systems would be readily known. Sampling procedures must be used in absence of these parameters. Samples from the four community unit school systems consisted of the current staff of teachers and are used in order to tests the equality of the set of population means for each pairing of the school systems.

School systems I and III were classified by members of the Bureau of Educational Research as the more integrated systems. A variety of measures indicated that the administrators of these particular school systems were likely to seek cooperation from their teachers. The other

school systems, II and IV, were classified as the more authoritative kind. Inabnit[4] in his thesis made a classification of these same school systems on the basis of the measures (2) Responsibility and (5) Administration used in the present study. School systems I and III were called non-restricted in the sense that the administration was disposed to share responsibility and delegate authority. School systems II and IV were classified as restricted. According to the studied judgment of the Bureau personnel, school system IV was more authoritative than school system II.

The usual test for the equality of a set of means is based on the assumption of the homogeneity of the variances and covariances. In the present investigation this assumption of homogeneity of variances and covariances is checked[5] and the results are listed in Table II. The tests

TABLE II. $X^2$ VALUES FOR THE SIX PAIRINGS OF THE FOUR DOUGLAS COUNTY SCHOOL SYSTEMS

| Systems | $X^2$ |
|---|---|
| I and II | 22.28 |
| I and III | 29.72 |
| I and IV | 58.57* |
| II and III | 35.92 |
| II and IV | 61.59* |
| III and IV | 46.25* |

* The starred values are greater than 38.9 and the hypotheses of the equality of the covariance matrices are rejected at the one per cent level of significance.

indicate that this assumption is rejected in half of the six pairings of the four school systems. In order to locate the possible reasons for this difference in the variance-covariance matrices of the populations, individual variances and covariances are tested for homogeneity among the four school systems.[6] These tests show that the variances of the administration and morale measures are probably different; the correlation of the influence and administration measures seems to be different for the four populations.

The test used in the present study for the equality of the set of population means is similar to the one for testing the equality of the means of two univariate normal distributions with different variances.[7] In fact, the test is a generalization of the normal deviate.

It is possible to obtain a "best" linear function of the scores on the six organization measures by using a modified discriminant function which assumes different variance-covariance matrices.[8] By using this linear function a compound score is found for each individual teacher of the four school systems. By using these compound scores, the four populations may be pictured in single dimensions; these various populations are shown in Figure 1. The large separation of school systems I and IV as well as III and IV is observed. The structure of the administrative organization of school system IV is obviously different than that of school systems I and III. School system II is located at similar distances from the other three school systems. Explanations and interpretations for these and other results are given at the end of this paper.

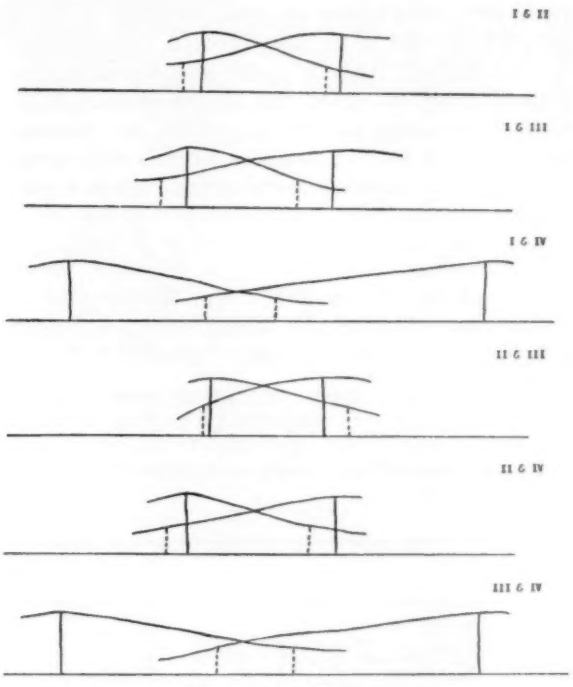


**Figure 1. Sketch: showing the single dimension distributions of the six pairings of the four Douglas County School Systems based on the six organizational measures.**

The test for the difference in the set of population means is indicated below:

Let $d_i = \bar{x}_i - \bar{y}_i$

where $\bar{x}_i$ and $\bar{y}_i$ are the sample averages of the ith measures from the two populations being compared.

[4] Darrell J. Inabnit, "Characteristics of Teacher Participation in Decision-Making Functions of Public-School Administration," University of Illinois. (Unpublished Doctorate Dissertation, 1954.)

[5] The test may be seen in: G. E. P. Box, "A General Distribution Theory for a Class of Likelihood," *Biometrika*, XXXVI (1949), 317-46.

[6] For a description of these tests of homogeneity see pages 228 and 234 of: C. R. Rao, *Advanced Statistical Methods in Biometric Research*. New York: John Wiley and Sons, Inc., 1952.

[7] A solution to the Behrens-Fisher problem of testing differences between means of two univariate normal populations when the ratio of the variances is unknown is presented in: Henry Scheffe, "On Solution of the Behrens-Fisher Problem Based on the t-Distribution," *Annals of Mathematical Statistics*, XIV (1943), 35-44.

[8] For a derivation of the modified discriminant function see Chapter VI of Douglas R. Bey, *op. cit.*

Let $L_{ij} = \frac{a_{ij}}{n_x} + \frac{b_{ij}}{n_y}$

where $a_{ij}$ and $b_{ij}$ are the elements of the variance-covariance matrices of the two populations being compared and $n_x$ and $n_y$ are the sample sizes from these two populations.
and $L^{ij}$ are the elements of the inverse matrix of the matrix $L_{ij}$

Then $\sum_{i=1}^{6} \sum_{i=1}^{6} L^{ij} d_i d_j$

will have an $X^2$ distribution with six degrees of freedom.

When sample estimates of the population variances and covariances are used in place of these parameters, this ratio has only an approximate $X^2$ distribution. This $X^2$ ratio was found in the present study by using the square of the difference of the compound means of the two populations divided by the variance of this difference.

A distance corrected for sample sizes is defined:

$$D = \frac{n_x + n_y}{n_x n_y} X^2$$

The relative distances between the four school systems are pictured in a sketch shown in Figure 2. School system IV occupies a position removed from the other three school systems; school system II is located in the direction towards school system IV.

**TABLE III. THE MOST DISCRIMINATING MEASURES IN THE SIX PAIRINGS OF THE FOUR DOUGLAS COUNTY SCHOOL SYSTEMS**

| Systems | Measure or Measures* |
|---|---|
| I/II | 5, 6, 2 |
| I/III | 6 |
| I/IV | 5, 6, 2 |
| II/III | 5, 1, 3 |
| II/IV | 5, 6 |
| III/IV | 5, 3, 2 |

* The measures are (1) Activity, (2) Responsibility, (3) Interaction, (4) Influence, (5) Administration and (6) Morale. The first measure listed discriminates well in all cases except in the pair II/III.

The relative importance of the measures in characterizing the four school systems with respect to their administrative organization is found by obtaining distances based on five of the six measures. Those measures which reduce the distance between school systems by the largest amount are, of course, the most important. This was accomplished by obtaining $X^2$ values for each of the measures taken singly and then subtracting them from the original $X^2$ value for six degrees of freedom. This difference is comparable to that which would be found by using a modified discriminant function based on the five measures and leads to an $X^2$ value with five degrees of freedom. The relative importance of the six measures is shown in Table III. The two measures in the area of the environment of decision-making are of considerable importance in characterizing school systems.

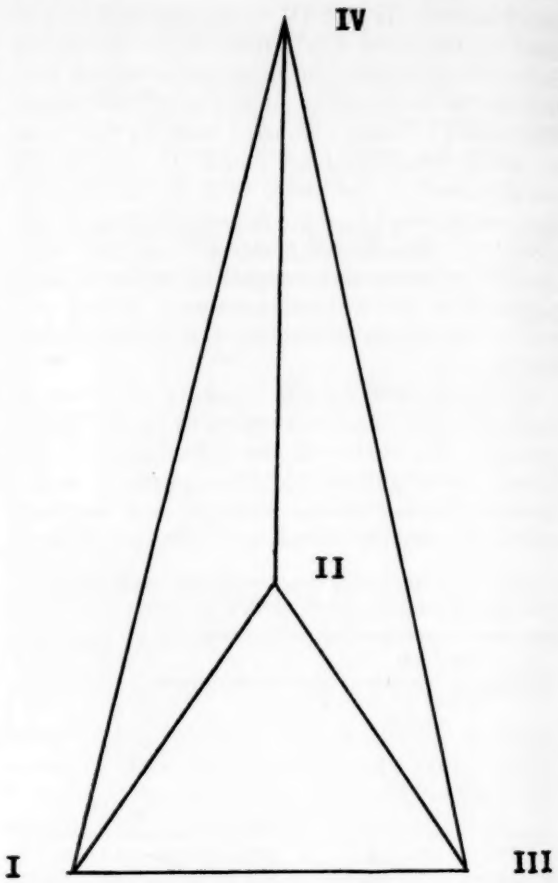


**Figure 2. Sketch: showing the relative distances based on the six organizational variables between the four Douglas County School Systems.**

## CONCLUSIONS

1) The administrator charged with the responsibility of running a good school occupies a most important position because of his function in the area of decision-making.

2) The present pilot study supplies empirical evidence that similar school systems are likely to differ in administrative organization viewed as social structure. The climate or environment of decision-making is the distinguishing characteristic of school organizations.

3) The professional attitudes of teachers influence the way they view the behavior of administration classified as authoritative. The teachers whose attitudes are more nearly like present educational theory are more likely to be disturbed in this type of environment.

4) The relationship of the perception of administrative behavior to satisfaction with role in the organization seems to indicate a type of threshold situation. A slight reduction in teachers' evaluations of administrative behavior appears to result in a sharp drop in teachers' satisfaction with their roles in the organization.

5) The amount and kind of teacher participation is not related, in the correlation sense, to teachers' perception of administrative behavior and only slightly related to their evaluation of their relationships to the organization.

6) The administrator charged with the responsibility of decision-making needs to be aware of "attitudes" and "feelings" of his colleagues, the teaching staff and other school personnel. If some instrument capable of supplying such information were available, it could be an important aid in planning adequate and successful educational services.

## DEDICATION OF PHI DELTA KAPPA HEADQUARTERS

*By* EMERY STOOPS, *President*

Five decades ago a small group of devoted men in education founded the association that has become Phi Delta Kappa.

Through the years, men with dreams and vision have looked forward to this day. They dreamed of the time when Phi Delta Kappa would own its own home.

This building stands now as a monument to the vision, plans, and contributions of Phi Delta Kappans everywhere. Its glass, wood, and stone are physical symbols of our more spiritual ideals of Research, Service, and Leadership.

Even though we are proud of this material accomplishment, it is not an end in itself. It is emblematic of our zeal to strengthen our own fellowship, to support public education, and to teach better America's children—now and for generations to come.

As we dedicate this International Headquarters let us rededicate ourselves to a public school system which will make *free* individuals in a *strong* nation. With this dedication of human, as apposed to material, resources, we cannot fail to achieve the high purposes of Phi Delta Kappa.

Through the authority vested in me as President of the Fraternity, I now, in behalf of the members of the 25th Biennial Council, dedicate this building to the high and enduring purposes of Phi Delta Kappa.

[Editor's Note: This dedication ceremony was held at the Headquarters building on the afternoon of Dec. 31, 1955.]

### THE WORLD AT OUR DOORSTEP

A television series featuring University of Texas foreign students and Austin public school pupils is described by its originator as "an experiment in friendship." Wayne E. Nesbitt of Houston, a graduate student in government, devotes a large amount of time each week to this extracurricular project because "all of us should try to do something to build understanding."

While he was a prisoner of war in Germany during World War II, Nesbitt reflected at length on the tragedies of international misunderstandings. "We have so much in common, it seems a shame to go to war over our differences," he concluded, and the ten years since the fall of the Axis have not weakened his determination to do something about it.

The plan for Nesbitt's television program, started last October, is simple: four high school students select a country in which they are interested and prepare questions about it. A University student from that country answers the panel's questions. Nesbitt serves as moderator. Among countries featured on the telecast during the year have been Egypt, India, Pakistan, Germany, France, Finland, Norway, Italy, Great Britain, Syria, Jordan, Israel, Malaya, Korea, China, Argentina, Australia, Thailand, Turkey, Greece, Iran, and The Philippines.

Teacher recruitment cannot be separated from *honest counseling* of future teachers.

### The Phi Delta Kappa Headquarters

**It shall be builded not only of stone, mortar, and the woods of the forest, but of the spirit of its founders and the devotion and loyalty of fraternity brothers like you and me.**

**It shall stand not only as a fitting tribute to fifty years of service to education, but as an inspiration to those who follow in the paths of research, service, and leadership.**

**It shall serve not only to sustain the character, the structure, and the archives of the fraternity; it shall ever serve education in the interest of all humanity.—*Paul M. Cook, Executive Secretary, 1928-1956.***

# Individual Differences and Mathematics

*By* JOSEPH W. KENNEDY *and* JOHN R. MAYOR

BOYS AND GIRLS are different. They are different in many ways. They are different for many reasons. The fullback on the football team may be good because he has great physical strength, likes to play football, and will work hard. The quarterback may be good because he makes up for his lack of brute strength with skill and cleverness. Some boys do not have the size or skill or drive to play football. Other boys possessing physical abilities like those of the fullback or quarterback do not play at all because they do not like body contact sports, or they work after school, or they spend their time studying.

These different boys and girls take mathematics. Some are mental giants and some are midgets, some like mathematics and some do not, some will be engineers and some will be housewives. If we treat all of them the same we would have as much trouble as the team would if the fullback and quarterback switched positions. Many attempts have been made to provide for their differences—some of these have been most successful.

### Types of Difficulties

Before considering some of these attempts, perhaps the ways in which boys and girls are different from the viewpoint of the mathematics teacher should be discussed. There are differences in general mental capacity which are widely tested. There are differences in "mathematics capacity," also, but these are not tested, probably because this capacity has not been well defined. Some tests attempt to measure "quantitative thinking." Differences in mathematics background may be determined by achievement tests which indicate which facts and skills have been learned. Previous school marks also give an indication of this difference, but neither measure is entirely satisfactory.

Some of the differences in the learning of mathematics are due to differences in reading ability, and poor readers will be limited in their ultimate attainment in mathematics, as well as in other subjects. Some of the trouble with "story problems" is undoubtedly due to reading difficulties, but poor readers also have trouble understanding directions and explanations in the text and may not grasp symbolic language as easily as good readers. As in other subjects, certain organic irregularities, if unknown or uncorrected, may cause individual differences or aggravate them. Poor hearing and seeing may prevent the student's learning in any area. The extensive use of the blackboard in mathematics makes good vision especially important. Illegible writing may be due to the student's non-mastery of writing skills or to organic difficulties. Poorly made numbers and letters prevent good work.

### Advent of General Mathematics Courses

The second World War brought mathematics teachers face to face with the realization that the traditional mathematics program in our schools had failed to provide many men and women entering our Armed Forces with the minimum essentials of mathematical competency. In considerable part through the Reports of the Commission on Post-War Plans, sponsored by The National Council of Teachers of Mathematics, mathematics teachers were persuaded to accept as respectable and quite desirable, the idea of a course or courses, in grades 9 to 12 which followed the plan of organization of the general mathematics of grades 7 and 8 and included many of the same topics at a higher level. In many of the larger schools this general mathematics course has been expanded to a three- or more-track program. Thus, the differentiated curriculum has become one method of providing for individual differences, primarily by providing for individual needs. The differentiated curriculum is another, if somewhat late, step in the change of our secondary schools from college preparatory to general education institutions.

Many of the larger schools have had some sort of sectioning in their mathematics classes for several years, but with the advent of the general mathematics course many of the smaller schools have had to select students for the various courses, also. Ability grouping, whether combined with a differentiated curriculum or not, is

JOSEPH W. KENNEDY *is on the staff of Wisconsin High School, University of Wisconsin and* JOHN R. MAYOR *is acting associate dean, school of education, University of Wisconsin, Madison.*

probably our best means of providing for individual differences. By ability grouping we attempt to form homogeneous groups. This selection is made by considering general ability, mathematics aptitude, reading level, arithmetic level, teachers' recommendations, and parent and pupil wishes. Usually the teacher or counselor makes a recommendation, but the final course selection is left to the student. Students do not usually have choice of sections within the course.

### Use of Heterogeneous Classes

The other general approach to the problem is to work within heterogeneous groups to provide for individual differences. Since all groups are heterogeneous to some extent, some of the things discussed here will be applicable to "homogeneous groups" also, but the following is primarily concerned with those classes, whether algebra or general mathematics or whatever, that contain students of widely varying abilities, backgrounds, needs, and interests.

Some teachers provide for good, average, and poor pupils by giving differentiated assignments. This may be done in two ways. One way is to have the entire class working on the same topic at one time, with the poorer ones on the most elementary ideas and the best ones on an advanced level. It is the stimulation of hearing advanced and different problems and the drill aspects of hearing lessons repeated for slow students that cause some teachers to feel that heterogeneous groups are the best after all. The other way to give differentiated assignments is to allow the better members of the class to work ahead at their own rate and to do as much as possible, even going beyond the book, if necessary, while the slow ones take as much time as is needed to gain an understanding of each topic. This method tends to separate students and therefore requires special efforts by teachers and others.

### Projects and Remedial Courses

This approach has its greatest value in general mathematics courses at every level, for example, allowing a 9th grade general mathematics student to go on to the 6th grade book after he has finished the 5th grade one, or helping a 12th grade student in a general mathematics course go on to analytical geometry or differential calculus when he is ready. It would probably not be desirable to allow a student to go on to geometry after he had completed freshman algebra. This method is most successful with students who have big background gaps and are in or will soon be in terminal courses and those who are in small advanced classes.

Projects also provide teachers with a means of providing for individual differences. Not only may good students find something in mathematics to work on in their spare time and perhaps become interested enough to investigate a topic which the class would never have time for, but some of the slower pupils may have an opportunity to show skills other than the usual ones exhibited in the classroom and thus be successful and perhaps become interested enough to work hard on the regular class work. Projects may take the form of work on an advanced topic, models, class reports, book reports, experiments requiring mathematical interpretation, etc. Projects are stimulating.

Another area in which work is being done in an attempt to bring the slow student up to a higher level is that of remedial work. By remedial work we mean the filling in of gaps in the student's mathematical background. It also includes remedial reading. Some of this work may and should be done in the regular class in the form of differentiated assignments, it may be a part of the regular class work in a low group, but remedial reading and remedial arithmetic are often handled in separate classes. Remedial reading may give students a feeling of success and make them more confident in their other studies. Remedial arithmetic is a relatively new idea. Educators are recognizing that weak arithmetic is a serious deficiency and needs to be corrected.

The correction of organic irregularities is not within the scope of the average classroom teacher, but if she is aware of their possible existence she may recognize them as such and refer them to specialists.

Provision for individual differences is a complicated problem whose solution requires the consideration of many factors. Although each school and teacher must solve their own problems, ability grouping seems to be the best single answer at the present time in secondary-school mathematics. Probably the most important part of the solution is the awareness that differences do exist and that they can and should be provided for.

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Although 45,700 graduates trained as elementary teachers came out of the colleges this year, there is still a net shortage of 72,000 teachers in our grade schools.

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The birds I heard today, which, fortunately, did not come within the scope of my science, sang as freshly as if it had been the first morning of creation.
—Thoreau

# S R BONDS

### An Old Error Corrected

This is written in response to your letter of October 14 in which you raise the question whether one of the purposes of what became Alpha chapter was largely social. I do not recall that there was a social purpose other than that which normally comes by sharing responsibility for the success of our fraternity and its meetings. Pi Kappa Mu's ritual, copy of which I still have, in the "Closing Charge" does give serving "in a social way" as a candidate's obligation. But in the Charge and also in the Oath much is made of research work and of responsibility for the solution of some phases of our pedagogical problems. Social service was something of a purpose but I think it would be in error to say that our purpose was *largely* social. I believe, therefore, it was proper to leave the social purpose idea out of the current history. Parenthetically, I wrote, memorized, and gave *Plato's Discourses* at the meetings during the few years I was at Indiana.—Charles M. Reinoehl (Alpha 23), emeritus professor of education, University of Arkansas.

### Study Day Still Popular at Manatee

Thank you for editing my manuscript so expertly and for letting me see it. You did an excellent job. We are continuing Study Day with very few changes from what we were doing when you were here. My biggest job is finding enough space for our classes and activities, for our enrollment has passed 1000 now and we shall have no additional rooms until next fall. The most popular change we have made in our Study Day, so far as the teachers are concerned, is giving a free period at least every other Study Day to the homeroom teachers. There had been some resentment over the loss of the free period on the very day when our work is most tiring.—Gladys Mapp Cannon, director of Study Day, Manatee County High School, Bradenton, Florida.

### Kudos for November

In behalf of the Commission, I should like to thank you sincerely for the tremendous job you did on assembling the information and articles which appeared in the November issue of PHI DELTA KAPPAN. We have had many favorable comments on the publication, and I feel that you deserve a great deal of credit in presenting the material in a way which was inviting and interesting.—Glenn Jensen, chairman, Commission for Free Public Education.

May I commend you for your editorial in the November PHI DELTA KAPPAN. It is one of the most analytical analyses that I have ever read. You have indeed pointed out the major weakness of school administration. As a Commission member who contributed next to nothing to this issue I can say properly that it is one of the best which you have published in years. I wish that I had had time to be of more assistance.—Natt B. Burbank (Beta Delta 775), superintendent of schools, Boulder, Colo.

Permit me to offer my appreciation for your unusually fine (November) editorial. You may be certain it will be read by many non-PDK's. I wish it could be made mandatory reading for every teacher in America! Wherever I have gone in Phi Delta Kappa circles, there have been pleased voices commenting on our magazine. I shall look forward to contributions which I feel sure you will continue to make to educational literature. The whole November issue is superb!—E. B. Chrisman (Alpha Gamma 312), principal, John R. Rogers High School, Spokane, Wash.

### We Would and Did! (See Page 207)

Your November editorial carried implications for educational practice. Particularly the "Second Evil" dealing with the publication of tentative conclusions based on partial data. For the past three years I have been working on an Ed.D. thesis at Teachers College, Columbia University (Beta Chapter). My topic is: "The Processes of Decision-Making in Secondary School Administration."

My data were gathered from questionnaires distributed throughout the United States. An analysis of the questionnaires shows certain patterns, and leads to both conclusions and convictions. In your words, my research has reached tentative conclusions based on partial data. Now sir, I would like to ask a question. Would you print, as an article, my partial data? The readers would be invited to criticize, attack, support, or challenge the data and its conclusions. As you state, this method is followed by other professions. If you are willing to experiment for the sake of educational change, so am I. The only thing I ask would be publication in either January or February of 1956. This would allow me to make use of any responses.—Alan H. Weiss (Beta 3917), Roosevelt Junior High School, West Orange, N. J.

### The *Editor* Wrote the Headings!

After reading Glenn Jensen's report in your November issue, it seems to me the author has overlooked a very basic fact, which simply cries out to me from his figures. *The results show conclusively that the critical writings have not made a serious impression on the general public.*

This came to me clearly, when I tried to answer the various questions myself. I had *not* read any of the criticisms listed in Table I, page 61, and would have been in the group having no opinion on page 62. However, when it comes to such questions as discussed on page 63 and following, I *have* an opinion, but it does not depend on critical articles published in magazines.

Therefore I take exception to the heavy heading at bottom of page 63, *Far Too Many Have No Opinion.* This is a good sign, showing that the critical articles, many of which are not justified, simply have not reached at all about half the population. I also take exception to your final paragraph heading, *Ignorance of Schools Still Great.* No, this study shows only that ignorance of critical articles is still great. Only three per cent of the housewives had no opinion about teachers' salaries. Therefore 97 per cent of them know something about teachers' salaries.—M. Wistar Wood, dean, Charles Morris Price School, Philadelphia.

### Another "Old-Timer" Approves

I very much appreciate your letter regarding your elimination of the paragraph on Page 9 of Dr. Lee's dissertation. I could not find out who did it, hence have been unable to thank anyone for making this very important change. I wish to thank you for taking the time to check on this matter, and for making the proper correction. With Dr. Reinoehl, I too approve the present "history" of Phi Delta Kappa, as published in the October issue of KAPPAN.—William T. Stephens (Alpha 8).

# Headquarters Building Fund

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| *Amounts Given* | *Number of Contributions* | *Amounts in Dollars* |
|---|---|---|
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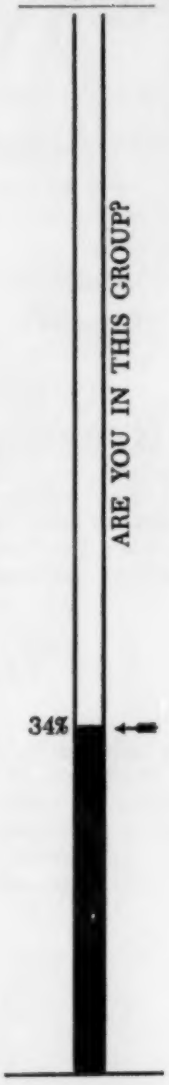
| 3 | 270 | 810.00 |
| 4 | 132 | 528.00 |
| 5 | 1717 | 8,585.00 |
| 6 | 1123 | 6,738.00 |
| 7 | 84 | 588.00 |
| 8 | 71 | 568.00 |
| 9 | 38 | 342.00 |
| 10 | 1342 | 13,420.00 |
| 11 | 7 | 77.00 |
| 12 | 27 | 324.00 |
| 13 | 5 | 65.00 |
| 14 | 8 | 112.00 |
| 15 | 87 | 1,305.00 |
| 16 | 3 | 48.00 |
| 17 | 7 | 119.00 |
| 18 | 5 | 90.00 |
| 19 | 6 | 114.00 |
| 20 | 32 | 640.00 |
| 21 | 2 | 42.00 |
| 22 | 1 | 22.00 |
| 23 | 2 | 46.00 |
| 24 | 1 | 24.00 |
| 25 | 188 | 4,700.00 |
| 27 | 1 | 27.00 |
| 28 | 5 | 140.00 |
| 29 | 2 | 58.00 |
| 30 | 4 | 120.00 |
| 31 | 1 | 31.00 |
| 32 | 1 | 32.00 |
| 33 | 3 | 99.00 |
| 35 | 4 | 140.00 |
| 40 | 1 | 40.00 |
| 50 | 25 | 1,250.00 |
| 70.95 | 1 | 70.95 |
| 75 | 1 | 75.00 |
| 100 | 24 | 2,400.00 |
| 151 | 1 | 151.00 |
| 500 | 2 | 1,000.00 |
| 1000 | 1 | 1,000.00 |
| Miscellaneous | 278 | 4,492.12 |
| Totals | 6528 | $52,060.07 |

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